



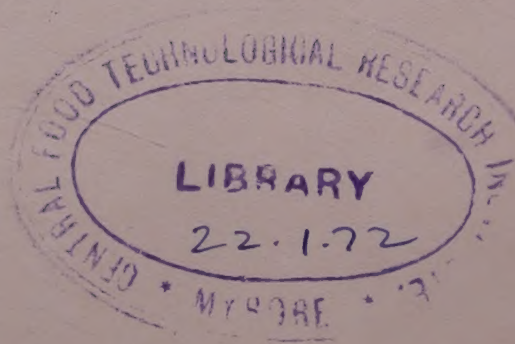
Indian Institute of Foreign Trade

**SURVEY
of
INDIA'S EXPORT POTENTIAL
of
FRESH AND PROCESSED
FRUITS AND VEGETABLES**

June • 1968

Vol. IA (of six)

FOR LIMITED
DISTRIBUTION ONLY



UNITED STATES OF AMERICA

AGENCY FOR INTERNATIONAL DEVELOPMENT

American Embassy, West Building, Chanakyapuri,
New Delhi-11, India

September 10, 1968

Mr. N. S. Vaidyanathan
Deputy Secretary
Ministry of Commerce
Government of India
New Delhi

Dear Mr. Vaidyanathan:

Transmitted herewith are the requisite number of copies of the first commodity survey completed under the Export Promotion Division's Program for U.S. fiscal year 1968 -- Fresh and Processed Fruits and Vegetables.

As you know, seven commodity surveys have been commissioned during the year ending June 30, 1968. These seven surveys cover the following commodities:

1. Fresh and Processed Fruits and Vegetables
2. Textiles and Made-Up Garments
3. Spices
4. Machine Tools
5. Oilcakes and Allied Products
6. Leather and Leather Products
7. Jute and Jute Products

We expect all of these surveys to be completed within the next six months and will follow the same procedure as has been established for this survey: i.e. just prior to publication of the study we will arrange to hold a presentation of the findings by the Indian survey group (and the U.S. consultant assigned to work with them) to the appropriate officials of the various Ministries of the Government of India who are concerned with matters relating to production and marketing of the commodities in question. We will also arrange for a similar presentation of the findings to the relevant industry.

The purpose of these presentations is to permit rapid dissemination of the most relevant information and also to allow for some cross-examination of the survey group and the U.S. consultant to make certain that the questions uppermost in the minds of the relevant government officials and the industry will be answered in the final report.

Both the survey group and the U.S.A.I.D. Mission have gone to great lengths to print and distribute this report with a minimum of time lost so that it will be available for consideration while the data contained therein is still current. As you know, trade statistics get stale very quickly. The report can now receive the attention it deserves so that such actions as the government and industry believe to be appropriate can be taken with the least practicable delay.

Mr. N. S. Vaidyanathan

September 10, 1968

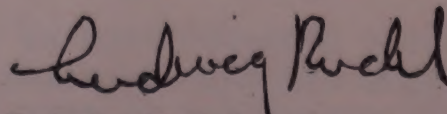
In this connection, I call attention to the recommendation made during the presentation of findings to the Government of India on May 31, 1968, and endorsed by Mr. K. B. Lall, that a task force be established under the chairmanship of the Planning Commission or the Ministry of Food and Agriculture, with representation from each of the Ministries that would have some responsibilities in connection with implementation of the findings of the report. I heartily concur with this recommendation and hope such a task force can be established as quickly as possible for each of the survey reports subsequent to the submission of the report to the Government of India.

We have discussed the method by which these reports should be distributed to the industry and it was agreed that distribution would be arranged through the appropriate Export Promotion Council. I have therefore reproduced an additional 150 copies over and above the requirement for the Central and State Governments so that adequate supplies of the report will be available for the industry.

The U.S. consultant who assisted the Indian Institute of Foreign Trade in the performance of this study, Mr. Charles W. Duncan (formerly Vice-President of Libby, McNeil and Libby, Inc.) has provided me with his own personal views after having spent a good portion of the last eight months in India. I am attaching to this letter a copy of certain sections of his report to me, because I believe the Government of India and the industry may find it to be of value in considering the Indian Institute of Foreign Trade's report. Please note, however, that Mr. Duncan's report is dated June 3, 1968, based on an earlier draft of the report. Subsequent to Mr. Duncan's departure from India, the draft report was to some extent modified. Nevertheless, I believe many of his comments, particularly his thoughts with regard to further action required, are quite relevant.

I hope the material contained in these six volumes will be useful to bring about an increase in India's foreign exchange earnings from fresh and processed fruits and vegetables. The U.S. Economic A.I.D. Mission stands ready to offer necessary assistance in the implementation of these findings.

Sincerely yours,



Ludwig Rudel, Chief
Export Promotion Division

- Attachments: 1) Report of Mr. Charles W. Duncan
2) Ten Year Horticultural Development Program:
(Prepared by Mr. Charles W. Duncan)
3) Letter from Mr. Charles W. Duncan discussing
organizational structure of horticultural research
4) Letter from Mr. H. D. Shourie transmitting the report
(with attachment "Report of the Seminar on Exports of
Fresh and Processed Fruits and Vegetables")

Report
of
CHARLES W. DUNCAN
International Trade Consultant
to

LUDWIG RUDEL

upon Completion of Assignment as Advisor to
the Indian Institute of Foreign Trade's Study
Group on the Export Potential of Fresh and
Processed Fruits and Vegetables.

New Delhi

June 3, 1968

Mr. Ludwig Rudel, Chief
Export Promotion Division
Agency for International Development
New Delhi India

Dear Mr. Rudel:

FRUITS & VEGETABLES COMMODITY SURVEY

(.....section omitted)

I believe that this program, if it can be implemented, will produce within the relatively short range future (two to ten years, depending on the crop) developmental results in the agricultural production area, that will put India into a position to be reckoned with, in the international trade of horticultural commodities, in relation to other major producing countries of the world.

This program is designed to accomplish:

1. Rapid development of horticultural exports as may be possible, to make maximum contribution toward offsetting India's balance of payments deficit;
- and -
2. Establish a sound foundation in an efficient manner, for the long range development and growth of India's horticultural industry to its truly great potential. The potential size of this Indian industry, by any standards, should be comparable to those of any other major horticultural producing country of the world, including that of the U.S.A.

The following are my comments in regard to these subjects:

A. FRUITS & VEGETABLES COMMODITY SURVEY

The study of consumer demands in the markets to where the products are to be exported, of course, was of basic importance to the study of the development of India's horticultural production; to be sure the crops and commodities that are produced find ready acceptance in export markets. For the most part the survey did a good job in this area.

However, the survey clearly showed, that India has little production of fruit and vegetable commodities, of type and quality that can be sold in the world's major importing countries of these commodities, at prices that are competitive with those prevailing in the world's major producing countries.

In other words, for the present and for the next few years, India's problems for participation, to a worthwhile degree, in the international trade of horticultural products lie in the production area, to a preponderant degree -- and not in marketing.

It therefore may be said, that perhaps heavier orientation of the survey toward the agricultural production area, especially in an objective, specific and quantitative manner would have been more appropos at this time.

Be that as it may, with this survey and resulting report, a good start has been made toward accentuating interest and motivating action, on the part of the government, agriculture and industry, toward development of a sound horticultural industry -- and to the great potential for exports of horticultural commodities into world trade.

B. SURVEY RESULTS & IIFT REPORT - STRENGTHS & WEAKNESSES

As you know, the survey was designed to clearly describe the present status of India's horticultural industry in all phases of its operation and productivity. Problems existing and obstacles to development and growth were to be identified and defined in objective terms, to enable the later study of major world participating countries' activities in this field to reveal by detailed comparison, India's true status in world trade product by product -- and cost ingredient by cost ingredient. Such comparisons would reveal India's weaknesses on a quantitative basis and clearly point to not only what would have to be done to enable the Indian industry to compete in quality and prices -- but in many instances how to do it -- and how much costs and quality would have to be improved to enable accomplishment. Another factor of importance to be learned was how soon could India expect to enjoy worthwhile horticultural exports to the countries surveyed (and others) -- and to forecast sales targets by major items.

In all fairness, the large part of the report is volumes of statistics, data and standard regulations. This is one of the virtues of the report. These volumes provide a compendium of such information all in one source, which should be interesting and useful to anyone in India interested in such general information about the world horticultural trade, until the statistics, etc. are outdated.

(....section omitted)

Probably one of the strongest parts of the report will be the Indian Institute of Foreign Trade's recommendation for making "in depth" studies on certain crops -- and in the major problem and obstacles areas, the industry is facing -- and feasibility studies for the establishment of horticultural and processing enterprises for specified crops.

(....section omitted)

India will be a major world supplier of horticultural products, of first category importance, if they are willing to do the right things correctly and in the proper sequence or order and are willing to make the required investments in funds, development work and time as I am outlining and recommending in the following part of my report.

I think the investment figure will be in the neighborhood of \$100 million, plus or minus 25% over the next ten years. After a year or so of the "studies in depth" I am recommending, the investment needs can be more clearly seen - but I think more investment would be required during the second half of the ten year period than during the first half.

C. RECOMMENDED ACTION PROGRAM FOR FOLLOW-UP TO COMMODITY SURVEY ON HORTICULTURAL CROPS

My recommendations for an Action Program to follow the "Commodity Survey" are enumerated in the following:

1. Select the few major crops that have great potentials, for both short and long range performance, for large volume, as measured by the present and historical shares these crops have in world trade.

In my opinion, this group should include the following crops:

- a) Bananas, with concentration on "phasing in" the Giant Cavendish, Lacatan and Valerie varieties for production in India -- and "phasing out", especially for export, the Dwarf Cavendish variety, as recommended in Dr. Krishnamurthi's Fourth GOI Plan Program. Also, special emphasis should be made toward developing the following banana export markets, with preference in the order listed: Japan, Persian Gulf countries and the USSR, likewise, as proposed in Dr. Krishnamurthi's program.
- b) Citrus (the full line, but especially mandarin oranges).
- c) Tomatoes -- both varieties especially adapted for the fresh market and those that are the best for canned products of juice, concentrate, puree and catchup.
- d) Asparagus -- both for the fresh market and for canning.
- e) Onions -- yellow, white, red and bermuda style -- for both fresh market and dehydrating.
- f) Potatoes -- all types and varieties that are in good demand in world markets; and
- g) A group of fragile fruits and vegetables for which there is sufficient demand, at least during certain seasons of the year, in important world fresh markets to obtain prices high enough to make feasible shipment by air freight.

Separate complete and "in depth" studies then be made for proper development of each crop.

I suggest for "study" consideration purposes, investment allocation, etc., this "air freight group" be treated as a single crop or commodity and should include the following: strawberries, avocados, artichokes, tomatoes, asparagus, mushrooms, melons, grapes, cucumbers, capsicum (green peppers), aubergines (egg plants), papaya (solo variety), salad type vegetables, flowers and shrubs (including roses and carnations), mangoes, lychees and other tropical fruits and vegetables that have sufficient consumer demand in export markets.

Little Israel exports from 100 to 150 tons of this type of crop daily during the winter season. India should do at least as well -- and really should do much better. True, Israel is much closer to large affluent northern European markets, but are politically "frozen out" of oil rich Arab countries and the USSR and eastern Europe, most of which should be "natural" Indian markets. A thorough study of Israel's techniques, varieties, methods of organization and quality control and packaging should be most helpful toward India getting into this lucrative export business. Dr. Gidon Blumenfeld, horticulturist, of the FAO of the United Nations in New Delhi may be of assistance in this area.

It may surprise you that I have not included pineapple as one of the "major crops" for immediate development. I have omitted it for the following reasons:

- a) Relatively speaking, pineapple is not of major importance as a fresh fruit in international trade, when compared to most other fruits. The preponderance of pineapple production is for canned products which are sold in world markets under highly competitive conditions, which requires highly developed varieties of fruit, none of which I feel sure are presently growing in India. Furthermore, it is not propagated by seeds. Propagation is done through use of "planting material" derived from growing plants, which may be difficult and expensive to obtain.
- b) Pineapple agriculture and agronomical technology is by far the most complicated and sophisticated of fruit crops. Consequently, it requires highly trained technologists with special equipment and conditions to develop the varieties and hybrids needed to be competitive from quality and costs points of view -- requires much time and heavy investment.
- c) Pineapple processing machinery and equipment is expensive and requires heavy investment in relation to rate of volume out-put. Consequently, before I could conscientiously recommend

the use of capital, technology and time for the development of a proper pineapple processing industry in India, exhaustive checks would have to be made to determine whether they have or can get proper varieties in sufficient quantity to justify the return on investment required, also the time it would take to develop the industry would have to be determined.

I therefore suggest that development of pineapple as a major crop should be limited to organizing and better managing present production and marketing of existing production for both domestic sales and such exporting as can be done of fresh fruit -- and maybe later, using one of the other fruit plants for processing pineapple juice and/or concentrate, for which, fruit quality is not so important as for canned slices, for example.

In the meantime, the science of pineapple agronomy should be more developed and planting material of known good canning varieties imported and field tested - from which fruit quality can be checked to determine suitability for future industry development.

The study teams to do these surveys should be comprised of competent men, soundly educated, as indicated in the following -- and with training and experience in those areas:

- a. Agronomist or Horticulturist, well grounded in Plant Physiology and Agricultural Economics -- oriented toward "agribusiness."
 - b. Food Technologist or Food Processing Engineer (fresh and/or canned) - oriented toward horticulture and agribusiness.
 - c. A good finance man, well grounded and with experience in professional accounting and statistical analysis -- oriented toward horticulture.
 - d. A man who can write well and objectively, with a style that brings out boldly the important facts, trends and conclusions, on a quantitative as well as qualitative basis, without a lot of verbiage to muddle the report and confuse the readers.
2. That two separate studies be promptly established and carried out for crops requiring longer range development, before they begin producing results. One for the "temperate climate" fruits (peaches, pears, apricots, cherries, plums and apples) which should be coordinated

with the search for desirable varieties and planting area locations, but should be conducted independently, because of the special characteristics these fruit crops will entail, in obtaining nursery stock of good yielding varieties of acceptable quality features -- and investment and financing requirements, principally substantial investment in orchard development up to five to seven years before the trees begin bearing commercially worthwhile quantities of fruit. Existing varieties (in India) should be checked to determine their acceptability, but should there be appreciable shortfall in field yields and fruit quality -- or if trees are beyond ten to fifteen years in age -- new disease-free nursery stock should be imported or satisfactory stock developed in India for new orchard establishment in sound climatic and soils areas, to produce optimal results. Both the fresh and processing varieties and prospects should be studied.

The second longer range development group that should be surveyed is that composed of tropical fruits and vegetable crops that are now growing in India in substantial quantities such as mangoes, lytchees, chickoos (or sapota), etc. The study should examine two principal areas simultaneously. One, to examine in detail consumer preferences for the styles and varieties that are growing most abundantly in India. Consumer surveys, followed by market testing in the countries to which export of these crops is expected, must be conducted to definitely establish this type of information before substantial investments in the agricultural and/or packing field in India for both fresh and processed products can be explored. Simultaneously, basic horticultural and agricultural studies should be made in India to locate existing concentrations of these crops, like the mango and chickoo orchards in the Bulsar area -- and plan sound horticultural production programs, including disease and pest control, plant nutrition, good cultural and production practices, etc., designed to improve yields and quality and to reduce production costs. This work must be done to later be coordinated with modern packing, processing and marketing plans and conducted along the lines as those recommended for the "six major" fruit and vegetable crops.

3. That the "banana program" that has been developed by Dr. S. Krishnamurthi, Managing Director of the Banana and Fruit Development Corporation Ltd. (of Madras) -- and Chairman of the Agricultural Committee of the GOI Official Fourth Plan -- and which will be recommended by him as representing the consensus of that committee -- be approved as recommended

and be officially included as part of the GOI Fourth Five Year Plan -- then be carried out as Dr. Krishnamurthi has proposed, pending the final results of the "in depth and feasibility study" I have recommended for bananas. This "study should be carefully coordinated with Dr. Krishnamurthi's program and his advice and counsel, also his services where at all possible, must be solicited and utilized in carrying out the "banana study", to the extent he finds possible.

4. That the Coorg citrus area be carefully studied for establishing priority (over other areas -- and in investments) in the development of a "southern segment" of a concentrated Indian citrus industry. This should especially be done in mandarin oranges and other crops that respond favorably within temperature ranges similar to those that are good or optimal for citrus -- and that would do well in the Coorg soils.

Kr. K. M. Aiyappa, Joint Director of Horticulture in Bangalore/Coorg, should play a prominent role in structuring, supervising and evaluating the "citrus study" in the Coorg district, as he was primarily responsible for developing the fine work that has been done there on citrus horticulture (particularly with developing grafting material and nursery stock of Satsuma variety of seedless mandarin oranges). Dr. Krishnamurthi should also be most helpful in the Coorg or southern oriented citrus survey, as I believe citrus also falls under his jurisdiction and he and Dr. Aiyappa have collaborated in their work for years.

India is very fortunate to have these two fine scientists, with such widely known and highly held reputations as authorities on such important world crops as citrus and bananas. Of course there are many other good scientists in India, but I was particularly impressed with these two, among those I met.

Also, that the Abohar region of the Punjab be also carefully studied for establishment of priorities, similar to those recommended for Coorg, in the development of a "northern segment" concentration of the Indian citrus industry and other crops - similar to the same study I am recommending for Coorg. This recommendation is made on the basis that Dr. Homer D. Chapman, of the University of California at Riverside, and probably the world's foremost authority on citrus, said that the Abohar region was the best area he saw for citrus in India, while he was here doing a thorough citrus survey under the auspices of the Rockefeller Foundation. The work to be done in the Abohar area should be thoroughly coordinated with that done in the Coorg area.

Establishment of southern and northern segments of an Indian citrus industry should provide a long season, which should be helpful in producing the large quantities of citrus products, especially mandarin oranges, that can be sold domestically and exported in the fresh state -- and exported in the form of canned sections (one to five million cases or 20,000 to 100,000 tons of finished product). This longer season should be advantageous from both production and marketing points of view.

5. I further recommend that an additional "in depth" survey and study should be immediately started and carried out by well qualified personnel in the various ancillary industries of containers, packaging, transportation, warehousing and shipping, as well as for ingredients required for processing, to determine what would be required to bring about reduction in costs and improvement in quality of these supplies, ingredients and services, sufficiently to enable packers (of both fresh and processed products) to procure them at costs comparable to those paid by packers in other major producing countries of the world, with whom Indian exporters will be competing.

When this survey and study is completed, the results should be incorporated into an 'Action Program', that should be aggressively carried out to obtain the results needed.

6. My final recommendation is that a group or board should be established, composed of top-flight quality and highly capable men from business, finance, agricultural production, the sciences of foods and agriculture, industry and government -- all of unimpeachable character and unquestionable integrity and of dynamic personality; that would be highly autonomous, especially in authority, to evaluate the results of this series of "in-depth" studies and formulate plans and review and evaluate progress performance periodically, establish investment priorities where and when needed, develop "action" programs and see that they are put into operation and carried out with expediency and according to plans and be able to obtain government and industry approvals and collaboration, to ensure that no vested interests of government and/or industry would take precedence over the actual and natural needs (as determined by this group of men) for developing an horticultural industry that would be strictly and fully competitive, on a world-wide basis, from the standpoints of quality of products and selling prices.

GENERAL COMMENTS:

1. When fruit crops become fully operative, even on limited scales, there will be sizeable portions of the total harvest that can not be exported, when viewed realistically on sound commercial economic bases. These portions must be sold in the Indian domestic markets (of course, this same will be true with vegetables, but probably to a lesser degree). Naturally, this will materially increase per capita fruit consumption, and result in the improvement of the health and welfare of the people.

This has long been one of the GOI's principal objectives and I am told that the target of two ounces, per capita per day, for fruit consumption was established as a part of the first Five Year Plan. However, it was not reached, nor was it reached during the second Five Year Plan, nor the third. Now, going into the fourth Five Year Plan the level has only been raised to about 1.3 ounces.

Consequently, the GOI should be highly receptive to -- and favorable toward -- programs that will materially increase fruit supplies for domestic consumption as well as for sale in export markets; like the programs recommended in this report, especially those for bananas and citrus.

2. It is usually easier to get into the fresh market business on crops that are adaptable to being sold fresh as well as processed than it is to get into canning business -- and requires less investment -- and can be done more quickly, especially for developing exports. This pertains to crops I have recommended for development, like citrus, tomatoes and asparagus. Consequently, where priorities of time, development work and investment are necessary, development of production for the fresh market should take precedence over production for canning.
3. I have spoken to you about "PLANNING", but apparently did not make myself clear enough to impress you with what I mean regarding its specific use in this horticultural field. There are so many related and interlocking factors that must be developed and carried on simultaneously that a very specific type of planning, that is not sophisticated beyond what "we farmers" can understand, must be utilized.

We found, a number of years ago, that the use of the PERT system of planning is a highly effective method for horticultural industry projects. I'm sure you are familiar with this system that was developed by the Navy, "Project Evaluation and Review Technique." It can be quite simple and serve as a strong disciplinary guide in just organizing a project plan and conducting periodic progress performances ^{review} and it can be developed up to highly sophisticated computerized "checkouts" of events, time, work and investment factors of the project.

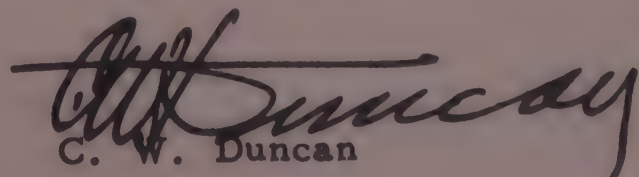
Frankly, for the type of planning required for carrying out the crop and problem studies I've recommended, I wouldn't be without a PERT network for each study and sub-networks for most of the parts of many of them. These PERT networks would be my constant guide and used as a potent management tool to get the studies done right and on time.

The foregoing is "quite an order", but in my opinion are the important things that must be done and/or accomplished for the Indian horticultural industry to develop and flourish as it should. Of course, these recommendations are based on what I've learned about India during the relatively short eight months I have been working with you, and may have to be tempered somewhat in the political and social areas of which I know very little and do not profess to understand.

Attached is an incomplete and somewhat sketchy outline, with pertinent comments, which may be helpful in classifying and evaluating the great quantities of information the study teams will gather, if the program I've recommended in the foregoing is carried out. I could have done a better job with this outline had our survey developed more data and information in the areas required. However, maybe it will serve as a suggestion to illustrate my thinking, to some degree, in that area.

I am disappointed in what I was apparently able to accomplish for improvement of a lasting nature during my work here, and regret that I shall not be able to help you more in developing and carrying out the excellent programs you have started.

Sincerely yours,


C. W. Duncan

Attachment

OUTLINE FOR INDIAN TEN-YEAR
HORTICULTURAL DEVELOPMENT PROGRAM

Prepared By:

Charles W. Duncan

June 12, 1968

June 12, 1968

OUTLINE FOR INDIAN
10-YEAR HORTICULTURAL DEVELOPMENT PROGRAM

I. GOALS should be established for Annual Sales for each major crop, as recommended in my letter/report to you dated June 3, 1968.

TARGETS should then be fixed for the quantities that can be sold annually of each item in the total "Crop Groups" in each of the Export Markets--and the Indian Domestic Market.

These goals and targets should be realistically established by the "Survey Teams", as specified on pages 5 and 7 of my report, after they are far enough along in their work to have enough information to do a reasonably good job of forecasting such quantities. The goals and targets should then be recommended to the "Top Board", which I recommended be established, under point #6 on page 10 of my report--for approval, before a Major Crop Plan is formed and an Action Program is established and put into motion to aggressively work toward accomplishment of the respective targets and goals.

Broad examples of how such goals and targets might be established and eventual plans and programs formulated-- could be as follows-----

A. CITRUS CROP

The goal would be to develop a complete citrus crop industry composed of all the major citrus items of--mandarin oranges, thin skinned juice oranges, navel oranges, grapefruit, lemons and limes (also eventually other horticultural crops, that have similarly favorable climatic and soils responses, as do the citrus crops, to be planted in the same general area as citrus--for eventual multi-crop and product processing operations).

The targets and eventual plans for accomplishment would be established by "working back" from marketing potentials in the various areas-- and by "working up or forward" from the agricultural production-- and processing capabilities, for both the fresh market and canning-- to obtain a well balanced flow of all phases of production to all sectors of consumption at optimal prices on individual items, and thus obtain the best possible incomes for growers for their overall crops.

The procedure the Survey Study Teams would probably follow is as follows---

Select a key item like "Canned Mandarin Orange Sections" and establish a marketing target figure -- say 3 million cases per

year (such rate to be accomplished by the end of the 10th year). Using estimated and approximated figures-----

- = 3 million cases would require about 75,000 tons of fresh mandarin oranges (70,000 tons for export and 5000 tons for domestic sales).
- = To produce a balanced flow of product at optimal prices-- the study may show that 50% of the total mandarin crop should be canned-- so the total harvest would then have to be 150,000 tons of fresh mandarins.
- = 40% of the harvest (60,000 tons) would be sold fresh. The 40,000 tons, which would grade top quality, would be sold export-- and the 20,000 tons of lower quality would be consumed in the Indian domestic market.
- = The remaining 10% of the harvest (15,000 tons) would be of too much inferior quality to be sold either fresh or as canned sections-- so would have to be juiced and concentrated into orange concentrate. Production from 10,000 tons would be exported and that from 5,000 tons would be sold domestically.
- = Market prices for export and domestic distributors-- to freely move all products into consumption-- might dictate the following prices to be paid to growers, for each of the following purposes--

Fresh Market Sales Average for Domestic and Export Sales	\$80 per ton
Canned Sections	\$35 per ton
Concentrated Juice	\$20 per ton

Attached is a bar chart showing comparative quantities of the foregoing broken down in tons and value (\$) for the 10th year of production and sales. A similar chart should be made for each year of mandarin orange production and sales forecasts. Also similar calculations and charts should be made for the other citrus fruits that make up the overall crop-- (juice oranges, navels, grapefruit, lemons and limes).

These bar charts could be used in many ways to "up date" forecasts-- and check actual performance against forecasts-- as the program progresses.

The procedure outlined in the foregoing would then be extended to determine the number of citrus trees needed to be planted to produce the tonnage required to satisfy sales targets-- from which the acreage would be calculated as required--

agricultural production, processing and ancillary investments could then be calculated to provide facilities for producing, handling and processing the crops.

- B. Take another key item-- "Bananas", which, although not as complicated as the citrus procedure, as all the production would be sold fresh, -- still requires similar treatment, as that for citrus-- in "working back" from market potentials-- and building up from production capabilities-- for both domestic and export sales-- market by market-- and variety by variety. Obtaining planting materials for the new varieties that would be required to satisfactorily compete in export markets-- will represent quite a problem and may prove to be a "critical path" bottle-neck-- as such planting material (suckers) must all be imported--at least for the first 4 to 7 years of development.

For example, a goal of 400,000 tons of total increase in Indian production--over a ten year period---250,000 tons for export-- and 150,000 tons for domestic consumption, would require very careful and detailed study and planning to obtain a proper balance among the varieties needed (Giant Cavendish; Valerie; Lacatan) for the increased production and to "phase out" some the present Indian variety (Dwarf Cavendish) that may not be needed.--Also to provide the acreage, facilities, planting material, transport and financing to carry out the program.

Here again the "bar chart" comparison technique for annual targets could be used to good advantage, to keep the program "in bounds" with direction and on schedule with budgeted rate of progress.

- C. Similar outlines and procedures should be developed for each of the other 4 major crops-- and one for the "Air Freight Group"-- with 10 year Goals and annual Targets.

II. Limitations must be clearly identified as early in the program as possible and guides for an adequate plan to overcome them prepared.

- A. Physical Ability to accomplish goals within the 10 year period, in such areas as---

1. Sufficient acreage for each and all crops in the program, that can be farmed on a modern basis.
2. Supplies of planting material and seeds required to plant the available acreage.
3. Adequate technical personnel.
4. Enough sound progressive management-- and adequate good quality labor (training programs to develop good labor).

5. Ancillary industry improvement (transport, containers, packaging, etc. etc.

B. Investment Capital --\$100 million

= average \$10 million per year
= average \$14 million per major crop

- C. A clear understanding by all, of the desirability of ratio of "out-takes", in form of production and sales, in relation to "in-puts"--also the practical ability of maintaining such a ratio--and finally-- what ratio accomplishment must be used for planning purposes.

Some adaptation of the most commonly used ratio by business of net profit before taxes in % relation to the total capital employed may be useful. --Such as--

	<u>ANNUAL CROPS</u>	<u>LONG RANGE & TREE CROPS</u>
1. By end of 5 years	10%	0%
2. By end of 8 years	12%	8%
3. By end of 10 years	15%	10%
4. By end of 15 years	15%	25%

This means both invested "share type" capital and both "short and long term borrowed" capital (the sum of the two).

- D. Attached is a line chart showing the accumulated investment (solid line) that might be expected over the ten year period--which adds up to \$100 million.

The annual investments are shown in million of \$-----

\$2 million by the end of the first year.
\$3 million during the second year for an accumulated total of \$5 million
\$6 million during the third year for an accumulated total of \$11 million
\$18 million during the 7th year--for an accumulated total of \$64 million

Then tapering off to--
\$10 million during the 10th year for the final accumulated total of \$100 million.

This line chart also shows the annual "off-take" or gross sales (broken line) that might be forecasted for the 10 year period--if the program and investment that has been recommended is put into effect as outlined.

These estimates have been made on the basis of the following assumptions:

1. Capital investments will be made as shown by the solid lines on the chart.

2. That "borrowed capital" will be used in amounts equivalent to "invested capital" and thus calculating the total capital employed at the end of each year to be double the accumulated "invested capital" at the end of each year.
3. That production and sales will be accomplished each year to produce returns (profits) on total capital employed during that year, equivalent to the percentage rates shown in the table at the end of section "C" above under II-- which should be the case if the program is to be successful. No attempt has been made to correlate the rate of "off take" or sales with the rate of investment on this chart--but with the application of proper mathematics, such a chart could be made, which should be most useful.

III. Then Build a Detailed Plan-- using a series of PERT NETWORKS for the entire program.

- A. Master Pert Network for the overall plan--by crops--for each of the 7 crops, to reach the annual sales targets and 10 year goals for each, by the end of the ten year period. Major events in proper sequence of happening-- time; work; and investments required to cause them to happen on schedule-- to be clearly shown.
- B. Sub-Networks for each crop (and item)for the 10 year period to feed into the Master Network. This to be supported by annual networks for each crop.
- C. PERT-Networks for each separate "project" (such as plant location and construction; major groves and farms for agriculture production to support each plant and/or packinghouse operation- etc. etc.)
- D. Other guides and checks should be installed, used and kept up to date-- such as--
 1. Investment requirements by years for each crop--broken down into the following categories--
 - = fixed investment that can be depreciated (buildings and machinery, etc.)
 - = fixed investment that cannot be depreciated (land, water supply, etc.)
 - = capital of "share type" nature
 - = Working and/or operating capital
 - = short and long term capital loans.
 2. Physical possibilities and capabilities of solving problems and overcoming obstacles in the ancillary industries of containers, transportation, packaging, ingredients- to be sure these services, supplies and ingredients are available, at costs that are competitive on a world wide basis.

when needed. PERT networks would be helpful for each of these problem solving areas-- as soon as the "study teams" have developed enough information to formulate sound programs for improvement.

3. The "Middle Man" sickness-- brokers, agents, etc.- together with regional, state and city taxes and tariffs-- all of which so greatly raises the costs of Indian produce to consumers--without adding any appreciable value or service-- must forthrightly be tackled by the federal government for revision and eventual elimination.

IV. Two more areas of vital interest to everyone in India and especially the Federal Government are--

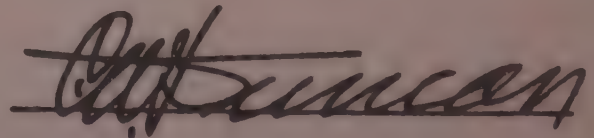
- A. Contribution the increased fruit production will make to the 2 ounce, per capita, per day fruit consumption goal, that is a part of the official GOI plan (and has been since the first 5 yr. plan).

So far, they accomplished 1.2 ounces.

I calculated that the "increased domestic consumption foreseen by the estimates included in this outline-- of mandarin oranges alone would add 0.1775 ounces per capita, per day--during a 3 months season of the fresh mandarin season. Of course, the increase in domestic consumption of the other citrus fruits-- bananas- tomatoes, etc. - all also foreseen in the program would probably put them over the top of their goal (even if all of the 600 million natives could "get at" the increased supplies.

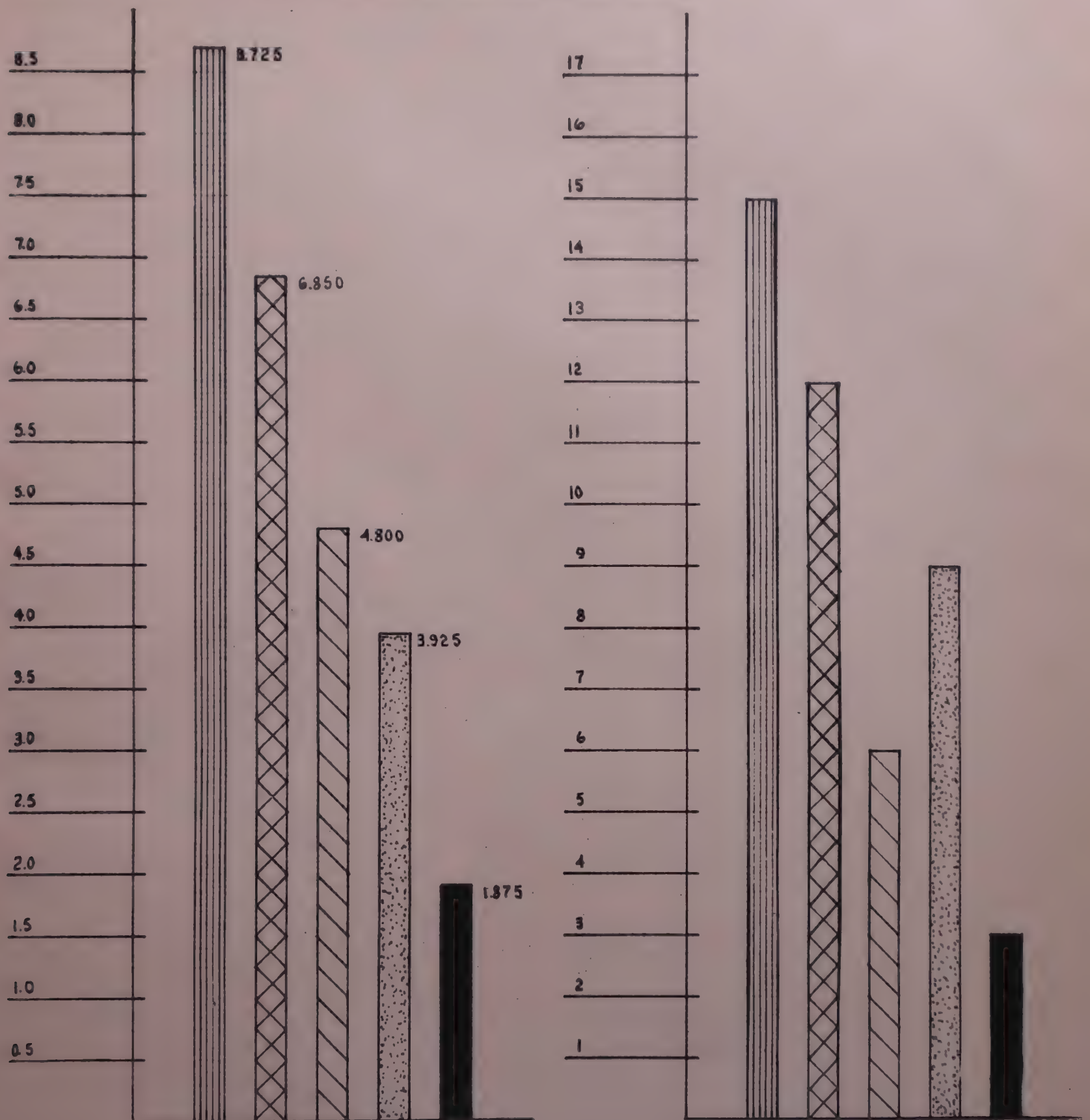
- B. The other item of course is the contribution the sale of crops in export markets will make toward improving India's balance of payment picture.

Barometer type charts should be published periodically as publicity in favor of supporting these Horticultural Industry Development programs.



C. W. Duncan
6833 S. Crandon Ave., Apt. 2
Chicago, Illinois 60649

DEVELOPMENT-INDIAN MANDARIN ORANGE INDUSTRY



VALUE :
MILLIONS OF DOLLARS (9)

TONNAGE :
10,000'S OF TONS (18)



TOTAL



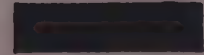
EXPORT



FRESH MARKET

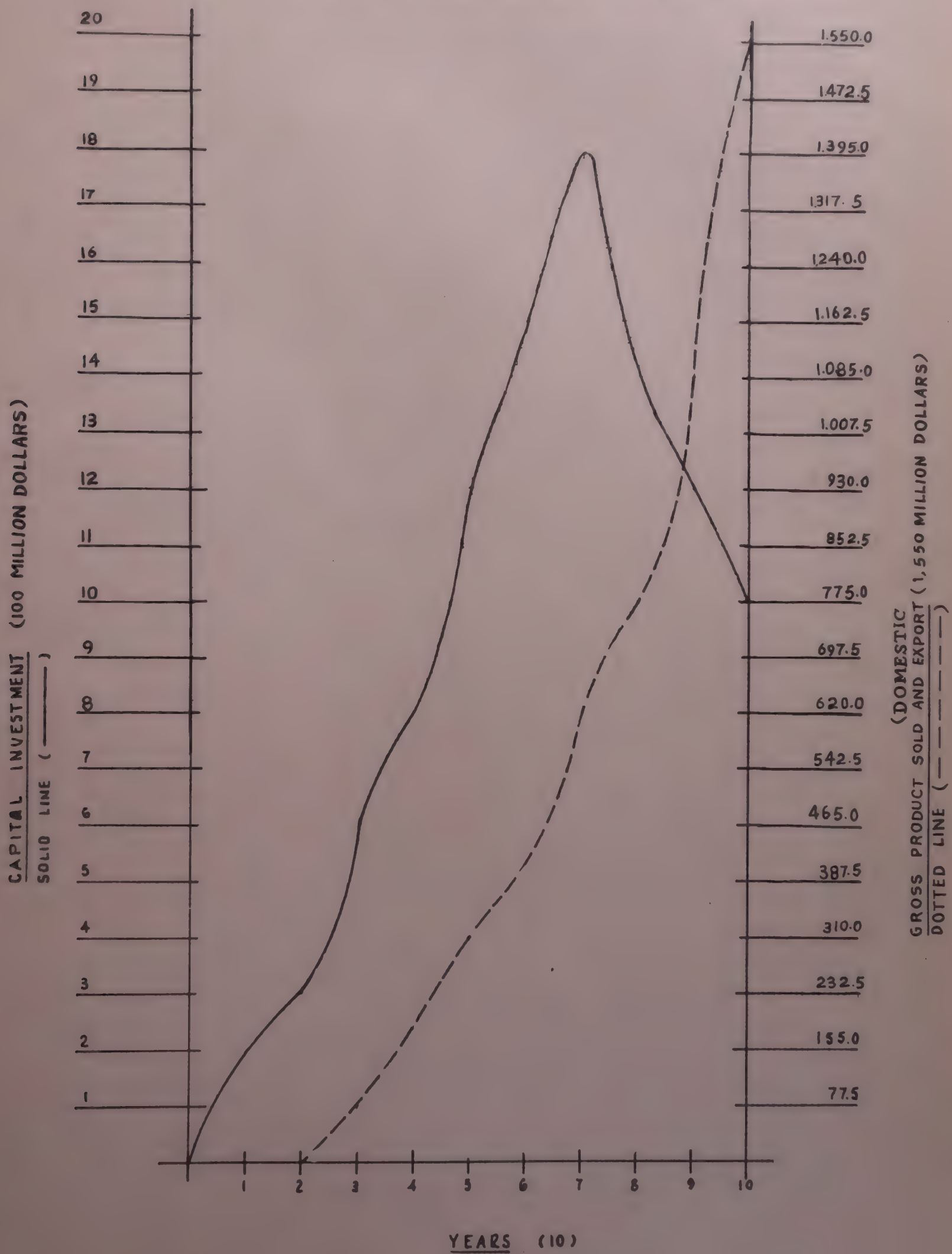


PROCESSED



DOMESTIC

ESTIMATED HORTICULTURAL DEVELOPMENT ACCUMULATED INVESTMENT OVER 10 YR. PERIOD- RELATED TO ANNUAL GROSS SALES



Letter from Charles W. Duncan to Ludwig Rudel
dated June 3, 1968, discussing organizational structure
needed for basic and applied horticultural research.

New Delhi
June 3, 1968

Mr. Ludwig Rudel, Chief
Export Promotion Division
Agency for International Development
New Delhi, India

Dear Lu:

One of the very important problem areas, which probably deserved a more complete treatment in my report to you, than I gave it, is extension of research and technology into actual implementation, use and practice in the development and growth of India's horticultural industry. Actually, I deliberately refrained from developing the subject, because of its personal nature (the personalities presently involved) and for fear that the political implications would likely cause my comments to be misconstrued, thereby doing more harm than good. So I decided to express my views to you, on the subject, in this separate letter.

Fundamentally, "classical, basic, pure research" in horticulture, both in the agricultural and food technological fields must go on if progress and "break throughs" are to be accomplished in the extremely essential struggle for the industry to become competitive in quality and costs of its products. At the same time, "applied research" must be practiced diligently, if development and growth of the industry is to be accomplished at a rate which is satisfactory to win the "war" against the great "common enemy", time.

The battle between the scientists, who advocate basic research, and management, who press for and stress applied research, goes on all over the world. The solution is usually a compromise in the form of adjudicated decisions by top management and/or well qualified governing entities -- and the resulting establishment of policies that determine courses action shall take to produce the optimal benefits to all concerned.

In the U.S.A. and other highly developed countries, the problem has largely been solved at the governmental and university levels -- through the highly developed profession and practice of "extension." The AID Mission here has some excellent extension experts on its staff (one of whom I met is Dr. William G. Amstein, Advisor to the Director of Extension at the Agricultural University of Andra Pradesh at Hyderabad). Also, some material progress has been made toward development of extension experts and practice of this profession in India, but progress in practical results so far, is too slow.

I have been most favorably impressed by the basic research being done at such places as the Agriculture University of A.P. at Hyderabad, the CFTRI at Mysore and the Horticulture Station at Bangalore/Coorg. However, I have been even more disappointed and unfavorably impressed by what I've seen in horticultural research at the . . . and . . . for development of fruit technology.

Even the good work being done in Hyderabad, Bangalore/Coorg and Mysore in basic research does not yet compare favorably with that being done at the Agricultural Institute in Bologna, Italy or the Food Technological Institute of Parma, Italy -- to say nothing of the many world renowned institutes and universities for horticultural and food technological research in the U.S.A. However, the very much more serious factor is that the "extension work" development in India is far, far behind that in Italy, the U.S.A. and in other countries, with whom India is competing in the development of her horticultural industry.

A good Extension Program must be established in India and priorities and incentives provided for its development, to the point where it becomes highly effective and efficient in producing results. The technology achieved from basic research that has been developed in Italy, the U.S.A., Japan, etc., over the last 50 to 100 years, can be "borrowed" and used in India, but the extension work and program must be developed and carried out right here in India, with well qualified and trained Indian personnel. The ideal would be the condition that exists in Israel, where horticulture and ancillary industries are constantly "knocking on the doors" of the technologists for more and better ideas for improving quality and cutting costs, the result of which is the well known success this little country has attained in the international world trade of horticultural products. However, something less, along the lines achieved in Italy, the U.S.A. and Japan, would do the job in India and produce admirable results.

The answer is sound organization and good management, with top-flight personnel who are highly oriented toward "agribusiness."

In the U.S.A., for example, the large food companies, who specialize in horticultural production and marketing, accomplish this by vesting the responsibilities of basic agricultural and food technological research -- also the establishment and maintenance of quality standards, in a separate "Research and Development" division, headed by a vice-president, who usually has a Ph.D. in one of the agricultural and/or food sciences -- and who is highly oriented toward "agribusiness."

However, the responsibility for applied research, quality control and extension work is vested in the "Operating Divisions", headed by Vice-Presidents and General Managers, who are highly oriented toward fully utilizing basic research and maintaining quality standards in operating their divisions, toward producing adequate growth of the company's overall business and satisfactory profits, for the owners or stockholders.

Problems, disputes and disagreements, that can not be settled by ready interpretation of the company's established policies, are then adjudicated between the R&D Vice-President and the Operating Vice-Presidents -- with arbitrary decisions if necessary -- by the President or Chief Executive of the company and/or the Board of Directors, for the optimal benefit of all interests concerned.

Such organization, or at least it's basic principles, should be highly effective for the development and optimal growth of India's horticultural industry.

The top-level Board (or group) I've recommended to be established in my report to you (point #6 of my recommendations) would be -- and have the functions of -- "The Board of Directors" and "Chief Executive."

The Agricultural Research Institutes and Agricultural Colleges of the Universities (especially the research departments) and the Food Technological Institutes, of the country -- represented and headed by one man (with a small but highly capable staff) -- would be and have the functions of the Research and Development Vice-President -- and have jurisdiction over basic research and development and maintenance of quality standards.

However, the applied research, quality control and extension program and work should be separate in organization and function, until such time, in years to come, after the industry has developed sufficiently, an Extension Board (or group) should be formed that would have the full-time responsibility of obtaining effective application of Indian research and agricultural and food technologies -- as well as all the research results and technology that can be "borrowed" from the U.S.A. and other countries for the development and growth of the Indian horticultural industry, at a rate that is of the maximum degree desirable and/or possible.

One day, maybe in 10 or 15 years, this "Board" will be absorbed into the Horticultural Industry, the theoretical "Operating Division" of the country; but in the meantime, it should be headed by a man "ten feet tall" with most of the qualifications of a Vice-President and General Manager of an "Operating Division" of a large U.S.A. company.

This Board must be composed of a few highly capable, well educated and trained young men -- or men who have modern and young ideas -- preferably men who have received their education abroad, in such countries as the U.S.A., Italy, or Israel, etc., where they have had an opportunity of seeing and/or experiencing applied research and technology in action and producing results. In visualizing the type of man I'm describing, I think of Dr. S.N. Rao, Horticultural Professor at the Agricultural University of A.P., in Hyderabad. I was very favorably impressed with Dr. Rao among the younger Indian scientists I've met, and believe he has the qualities to perform excellently on such a "Board," perhaps even to head it up -- for certainly such a "Board" should be weighted toward the horticultural, rather than the other food sciences, at least for the first few years.

I realize what I'm suggesting would require some sweeping changes -- but unless this or something like it is done -- without deviation from the basic organizational and personnel and management principles I have outlined, I fear India will "lose the war with time" -- and at the same time some of the major horticultural markets of the world, like the Japanese banana market or the general world market for canned mandarin orange sections, as I have highlighted in my survey report to you.

Horticultural research institutes, departments and stations should be doing basic research and be staffed by scientists that are dedicated to pure research only. Their facilities, however, must be much better developed, organized and managed, than is the case of the _____ to provide the example and leadership required for satisfactory development of India's horticultural industry. Their facilities should be available for the full use of the Extension Board and activity I suggested, but there should be a distinct cleavage between the research and extension line of authoritative policy establishment and organizational responsibility. Full collaboration and complementation of activities in their work and operations should be encouraged and attained to the maximum, but for responsibility to direction and management, each should report directly to the "Chief Executive and Board of Directors" (the top-level Board recommended in my report).

The USAID Mission, Delhi has some fine extension experts, as well as others in the food and horticultural sciences, that would provide invaluable guidance and assistance in forming and establishing an extension and research work program such as I've suggested. However, the really important ingredient to make such a program work and produce rapid results to the tremendous extent needed, is the selection of the management people, of the caliber which I've described. From what I've seen, they are available, if they can be selected and placed in the positions as would be indicated in a sound organizational plan, as I have outlined. Perhaps even more

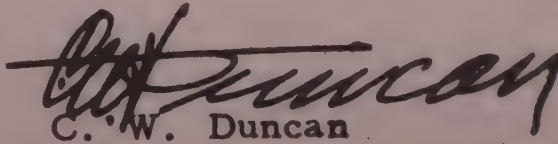
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important than this, however, is that such men, once they have been selected and assigned, be encouraged to function without undue influence of any vested interests of any kind -- political, institutional, cultural or selfish.

They will need guidance and counsel from time to time, perhaps even from outside of the country, but by and large, the really important characteristics of such men, especially those in management and supervisory positions, will be -- to paraphrase the late president Kennedy -- "To not think of what their country and its horticultural industry can do for them -- but rather think what they can do for the horticultural industry and their country."

I hope that the thoughts and suggestions I've expressed in this letter can be of some help in the guidance you plan to do, along the lines we have discussed from time to time, for the program to follow-up the survey we have just completed.

Sincerely,


C. W. Duncan

D.O.No. MR/3(5)1-27/68

September 6, 1968.

Dear Mr. Rudel,

I have pleasure in transmitting the Report of the Survey on "FRESH AND PROCESSED FRUITS AND VEGETABLES" conducted in 22 selected countries in accordance with the contract of the Institute with USAID vide letter No. MR/3(5)1-27/67 dated August 23, 1967.

You will find that although the range of commodities and products covered by the Survey is considerably wide, attempt has been made to go into depth in studying various aspects relating to their production and export. While the field survey was confined to 22 countries, effort has also been made to secure detailed information and data in relation to non-surveyed countries of significance.

We have endeavoured to put forth concrete and action-oriented recommendations based on the Survey. The Survey has shown the enormous potential of the development of fresh and processed fruits and vegetables in the country. I am sure that if the recommendations of the Survey are implemented in a substantial measure, these items will open up a sizeable avenue for exports.

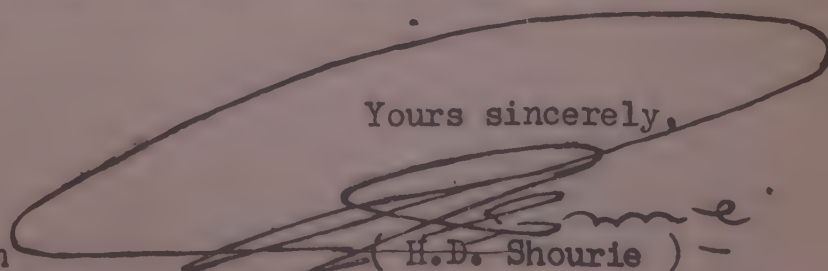
As you are aware, we have already taken the opportunity of presenting to the Government of India the major conclusions and recommendations arising from this Survey. The Institute also, in collaboration with Processed Foods Export Promotion Council, organised a two-day Seminar at Bangalore to consider in detail the recommendations embodied in the Report of this Survey. It was heartening that the Seminar participants, drawn from the concerned Ministries and Departments of the Central and State Governments, cooperative organisations, export organisations, research institutions and the industry & trade, appreciated and endorsed the conclusions and recommendations of the Survey. A resume of the Seminar deliberations and conclusions is enclosed. On the occasion of this Seminar an exhibition of representative samples of products and packaging materials, which were collected during the overseas field survey, was arranged for benefit of the participants.

On behalf of the Indian Institute of Foreign Trade I convey to you our great appreciation of the initiative taken by USAID for starting a programme of comprehensive surveys of important commodities of export potential. The credit for this effort primarily goes to you in your capacity as Chief of Export Promotion Division, USAID, New Delhi.

Kindest regards,

Yours sincerely,

Mr. Ludwig Rudel
Chief, Export Promotion Division
USAID, American Embassy
Chanakyapuri, New Delhi-11



(H.D. Shourie) -

THE SUMMARY REPORT

OF THE INDUSTRY SEMINAR ON EXPORTS OF FRESH &
PROCESSED FRUITS AND VEGETABLES CONDUCTED IN
BANGALORE ON AUGUST 23 - 24, 1968 MAY BE FOUND
IMMEDIATELY FOLLOWING PAGE 133 OF THIS VOLUME
AND PRECEDING THE SUBJECT INDEX TO THE REPORT

**SURVEY
OF
INDIA'S EXPORT POTENTIAL
OF
FRESH AND PROCESSED
FRUITS AND VEGETABLES**

prepared under the guidance of
THE EXPORT PROMOTION DIVISION,
U.S. Agency for International Development, New Delhi
for
THE MINISTRY OF COMMERCE, GOVERNMENT OF INDIA

INDIAN INSTITUTE OF FOREIGN TRADE
41-A FRIENDS COLONY,
NEW DELHI-14.

C O N T E N T S

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VOLUME I

SURVEY REPORT

PART A

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INTRODUCTION

Objectives

On an assignment from the Export Promotion Division of the USAID, the Indian Institute of Foreign Trade has undertaken a comprehensive survey on fresh and processed fruits and vegetables in 22 selected countries in Europe, West Asia and South East Asia. The Survey has twin objectives: (a) to study the horticultural industry in major supplying countries with a view to suggesting guidelines for action for the development of Indian industry and (b) to assess the prospects offered by different buying countries for selected fruit and vegetable items.

Survey Countries

The countries chosen for the survey comprised the following:

- | | | |
|---------------------|---|---|
| Supplying countries | : | Italy, Spain, Greece and Yugoslavia in Europe, Lebanon and UAR in West Asia, and Thailand, Philippines and Malaysia in South East Asia. |
| Buying countries | : | U.K., Sweden, Denmark, France, West Germany, Netherlands, Switzerland, and Belgium-Luxemburg in Europe, Bahrain, Kuwait and Iraq in West Asia and Hong Kong and Singapore in South East Asia. |

Efforts were made during the Survey to ascertain the prospects offered by every country, whether or not it had been chosen primarily as a supplying country. Similarly, although a certain country had been selected mainly as a buying country,

attempt was also made to study the horticultural industry existing in that country.

Commodities and Products

The Survey deals with tropical and sub-tropical fruits and related products of bananas, citrus, pineapples, grapes, lychees, papayas, guavas, chikkoos and melons, and temperate fruits comprising apples, peaches, pears, strawberries, apricots, plums and avocados. Vegetables and vegetable products included onions, potatoes, cauliflowers, cabbages, French beans, garden peas, mushrooms, green capsicums, artichokes, okra, aubergines, tinda, parwal, karela and yams.

Methodology

A Commodity Study was undertaken in India to acquire first hand knowledge of the structure of the horticultural industry in the country and the various factors that have to be taken into account for development of the industry. This was made possible through intensive discussions with important growers, growers' organisations, cooperative societies, leading processors, exporters, trading corporations, research institutions, concerned government departments, both at the Centre and in different States etc. On the basis of the knowledge acquired, it was possible to identify major areas which required detailed investigation in the Survey countries. Conclusions reached at the end of this phase were embodied in a separate report, which forms Volume II of the present Report.

Field survey in the 22 selected countries constituted the next step. The methodology in this phase was similar to that followed during the Commodity Study within India. Discussions were held with important growers' organisations, cooperative societies, processors, exporters, importers, distributors, advertisers, buying organisations, selected research institutions, trade & industry associations, concerned government departments etc. These discussions were supplemented by a careful analysis of secondary as well as primary data collected during the Survey, where the former included not merely the trade and other official statistics of different countries but also detailed studies and investigations conducted by the research organisations, trade associations etc. Although field survey was confined to the selected 22 countries, an effort has been made, as far as possible, to obtain a global picture of the industry in respect of every commodity. This will be evident from the frequent references made in the body of the Report to non-surveyed countries such as USA, Israel, Japan, South Africa and Australia.

On the basis of the investigations carried out during the field survey, and taking into account the resource base available in the country, assessed during the Commodity Study, certain tentative targets have been proposed by the Survey for exports considered feasible by 1970-71 and 1975-76. The financial outlay and physical inputs required to realize these targets and the strategy to be followed for developing production for export has also been indicated in the Report. These tentative targets have been based on a

detailed analysis of the import structure, pattern of consumption and likely changes in demand and supply over the next few years in respect of the Survey countries, and a study of the import trends and such general indications as are available from secondary data, in respect of non-surveyed countries. Besides, the major assumption in arriving at the value targets relates to unit prices expected to be realized in 1970-71 and 1975-76 in respect of various fresh and processed fruits and vegetables. This assumption has been based on current prices for established items like bananas and canned pineapples and peaches together with projected trends therein, and prices considered reasonable for other items which will be relatively new.

The Report

The Report is presented in six Volumes, of which Volume I embodies main recommendations of the Report. Volume I has been divided into two parts. Part A comprises Summary of Conclusions and Recommendations and General Review of the horticultural industry, followed by an analysis of Trade Prospects available in short and medium terms in different countries, the proposed Strategy for Development and Exports forming the last section. Part B is divided into two broad sections, Commodity Review and Country Review. In the section dealing with Commodity Review a detailed account is given of the horticultural industry, commodity-wise, in major supplying countries, indicating therein prospects available for India, in both short and medium terms, and the effort that needs to be put in to develop

the Indian industry on modern lines. The second section, Country Review is concerned with a detailed analysis of the consumption pattern in the Survey countries, which is further analysed in terms of production, imports and exports, marketing arrangements, trade agreements, grading and packing regulations etc. in relation to each of the countries.

A detailed review of the present structure of the horticultural industry, both fresh and processed, together with the major problems facing the industry, is given in Volume II. Volumes III and IV contain respectively data on fresh and processed fruits and vegetables in relation to the Survey countries, comprising statistics on production, imports, exports and prices. International standards on grading, packing, health regulations in the Survey countries, quota restrictions and tariffs, containers and weights, schedules of air freight and ocean freight rates etc are presented in Volume V, which also includes Agmark standards, FPO minimum standards and list of ISI standards for fresh and processed items. Lists of leading exporters, importers and distributors of fresh and processed fruits and vegetables in the Survey countries, together with that of manufacturers of machinery and equipment are given in Volume VI.

Survey Team

The team for the Survey comprised the following personnel of I.I.F.T:

(Next page)

Shri V. Vithal Babu Director Marketing Research	-	Project Leader
Shri S.K. Kalia Deputy Chief	-	Investigating Officer
Shri K.L.K. Rao Deputy Chief	-	Investigating Officer
Shri N.V. Rangaswamy Assistant Chief	-	Investigating Officer
Shri C. Parthasarathy Assistant Chief	-	Investigating Officer

Mr. C.W. Duncan, Senior Consultant, Thomas H. Miner & Associates, Inc., Chicago, (formerly Vice-President of Libby, McNeill & Libby) was associated with the Survey Team in the capacity of a Consultant, his services having been provided by USAID under Contract for this assignment.

Acknowledgements

The Institute is grateful to the Export Promotion Division, USAID for giving this assignment.

The heads of Indian Foreign Missions and the Commercial Representatives in all the Survey countries have very kindly extended full cooperation during the field investigations.

The Institute expresses its gratitude to the Union Ministry of Food & Agriculture, Department of Agriculture, Ministry of Commerce (E.P. Agriculture Section) and Directorate General of Technical Development, for facilitating useful discussions on problems

relating to the Indian Horticultural industry. The Directorate of Marketing & Inspection very kindly made available the basic data on the Indian horticultural industry. Consultations with the Processed Foods Export Promotion Council were greatly helpful in assessing problems of the processing sector. Discussions with the Indian Agricultural Research Institute and the Central Food Technological Research Institute provided valuable insight into the work being done by them in the fields of fundamental and applied horticultural research. The Directorate of Commercial Intelligence & Statistics was helpful in making available the customs sheets which proved useful in arriving at a more detailed break-up of the export statistics than is normally available from published sources. The Institute also expresses its thanks to the various cooperative associations, processors, exporters, trade associations and the State Trading Corporation for the discussions held and useful data provided, and gratefully acknowledges the valuable assistance rendered by the Commodities Division, Commonwealth Secretariat, London.

The credit for the work of Survey and preparation of the Report is due entirely to the band of staff-members of the Marketing Research Division of the Institute who under the supervision and guidance of Shri V. Vithal Babu, Director Marketing Research, have discharged this responsibility. They were ably assisted in this work by Miss S. George, Research Assistant, and Shri L.C. Kaushik, Superintendent.

SUMMARY OF CONCLUSIONS
AND
RECOMMENDATIONS

GENERAL REVIEW

Endowed with diverse geographical and climatic conditions, India produces a wide range of fruits and vegetables, tropical and temperate, annual production being estimated at about 20 million tonnes. In recognition of the importance of production of fruits and vegetables as a valuable supplement to the food resources of the country and as a sector offering sizable export prospects, increasing attention has been paid, in recent years, to gear up this industry to achieve the dual objectives. The progress achieved so far in the sphere of production and exports, however, has not been adequate. India's share in annual world exports of about \$ 7 billion is only \$ 9 million (Rs 67 million).

India's exports of fresh fruits and vegetables amounting to 109,932 tonnes (Rs 48.8 million) during 1967-68, represent a small proportion of the total production of the country. Besides, onions alone accounted for about 93% (103,362 tonnes valued at Rs 41.8 million) of the aggregate exports mainly directed towards South-East Asian markets. Next in importance are bananas (2,813 tonnes), mangoes (1,072 tonnes), potatoes (547 tonnes) and the rest comprising a wide range of commodities. Out of the total production of processed fruits and vegetables of about 47,180 tonnes, India's exports amounted to 6,189 tonnes (Rs 18.4 million) in 1967-68. Of the aggregate exports of processed items during 1967-68, mango juice, exported

mainly to USSR (about 2,000 tonnes) and Kuwait (about 1,000 tonnes), amounted to 3,300 tonnes (Rs 7.9 million) and mango pickles and chutneys 1,389 tonnes (Rs 4.1 million). Among the rest, dried mushrooms (Rs 2.2 million) constitute an important export item.

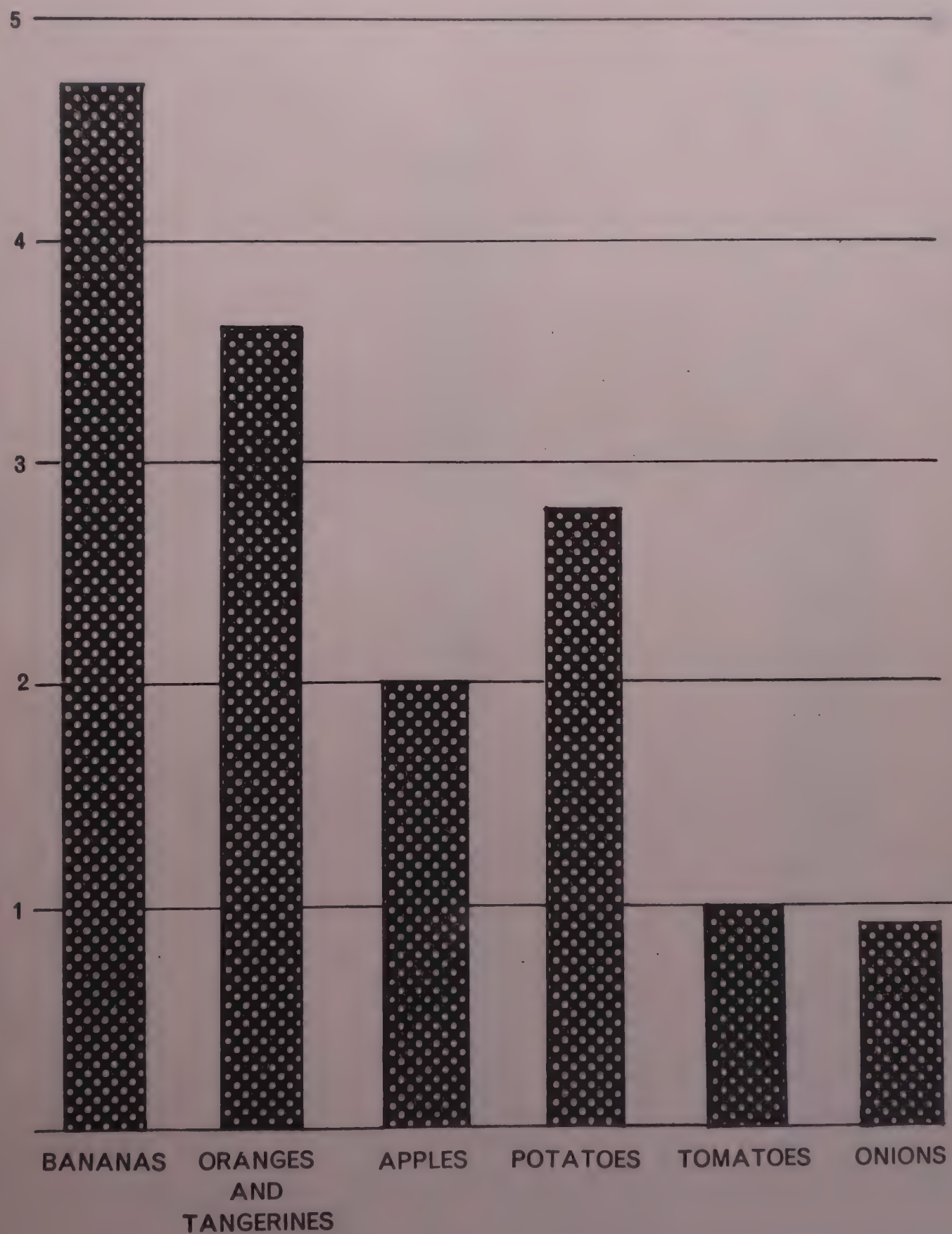
World Trade. International trade of fruits and vegetables is of vast dimensions. Average annual trade turnover, on global scale, is estimated at \$ 7 billion, fresh fruits and vegetables accounting for \$ 5 billion and the processed products for the rest. Significant items which enter international trade include bananas (4.7 million tonnes), citrus (4.5 million tonnes), apples (2 million tonnes), potatoes (3.5 million tonnes) and tomatoes (1 million tonnes), among the fresh produce, and canned fruits (1 million tonnes), fruit juices (100 million gallons) and tomato products (0.5 million tonnes) among the processed products.

Western Europe, as a region, is the single largest importer of horticultural commodities amounting to \$ 3 billion per annum. While major portion of its imports are accounted for by intra-European trade, over 40% of the supplies originate from non-European sources. USA, whose annual average imports range between \$ 500 million and \$ 600 million, is the second largest buyer of fresh and processed fruits and vegetables. South and Central American countries and countries of South East Asia (Philippines and Taiwan) principally meet the US market requirements. Importing countries in West Asia (Kuwait, Bahrain, Iraq and Saudi Arabia) and South East Asia (Hong Kong, Malaysia and Singapore) heavily depend upon their neighbouring producers like Lebanon & Jordan, and Mainland China & Thailand, respectively, for their supplies of fresh and processed fruits and vegetables.

WORLD EXPORTS OF FRESH FRUITS AND VEGETABLES

1965

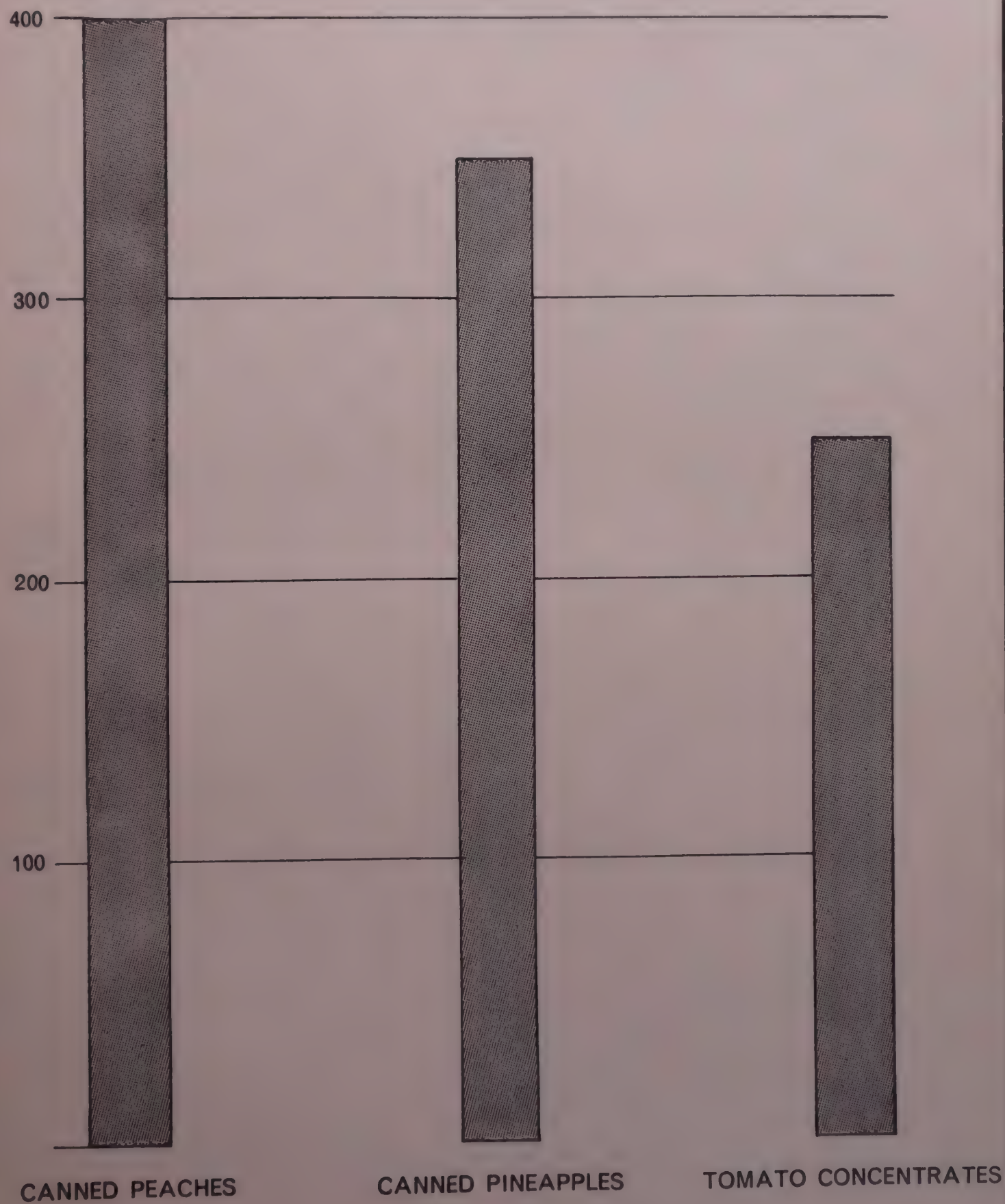
Million Tonnes



WORLD EXPORTS OF SELECTED PROCESSED FRUITS AND VEGETABLES

1965

Thousand Tonnes



Preferential Systems. Increasingly, major importing countries of fruit and vegetable items are tending towards procuring supplies at cheaper prices from within the economic groupings. For instance, the European Economic Community is quite inward looking in its quest for imports of fruits and vegetables, the supplies mainly emanating from Italy, France and Netherlands. For its requirements of tropical fruits, the EEC countries are attempting to obtain supplies from the Associated Territories on a preferential basis. Similarly countries like Australia, New Zealand and South Africa primarily direct their products to UK under Commonwealth preferences. Jordan and Lebanon in West Asia export mainly to countries of the Arab Common Market which provide free access to their produce. It will thus be evident that considerable polarisation and rigid groupings of well defined supplying and importing countries are being assiduously developed in relation to world trade in fruits and vegetables.

Efforts to scale down the impact of such preferential trading practices on the exports of horticultural commodities of the developing countries have already met with considerable success as is evident from the fact that major consuming countries like USA, UK, Japan, Canada and the countries of the European Economic Community have offered varying degree of concessions under Kennedy Round Negotiations. This has provided greater impetus for the expansion of international trade in fresh and processed fruits and vegetables, especially for the exports of the developing countries.

The striking success achieved by Israel, Taiwan, Malaysia, Philippines, Kenya and Morocco in the field of

horticultural exports, in recent years, underlines the fact that export opportunities in the world markets are not lacking even now for countries which attempt at efficient production and marketing. Significant factors which strengthen this conclusion are:

- i) Climate is a major constraint in Europe for round the year production and as a result imports will continue to remain during well defined off-seasons;
- ii) Per capita consumption of fruits and vegetables in Europe is growing fast in view of the rising living standards. Simultaneously greater emphasis is being laid on quality items and convenience packages;
- iii) Countries of East Europe, West Asia and South East Asia are emerging as major importing countries of fresh and processed fruits and vegetables, especially tropical fruits.

Viewed against this background, India's performance in the field of horticultural exports is insignificant. It has hardly made use of the off-seasonal advantages it enjoys in the European markets in respect of certain fruits and vegetables, the geographical proximity to markets in West Asia and South East Asia, the large overseas population of Indian and Pakistani origin, and the relatively low labour costs within the country. India's share in the exports of fruits and vegetables is very little and there is need to evolve effective measures for strengthening the horticultural base and developing appropriate marketing machinery to meet the highly organised and competitive world markets.

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STRATEGY FOR DEVELOPMENT

The Survey has brought into focus the various important problem areas in respect of the development and expansion of production base and exports of the fresh and processed fruits and vegetables. In respect of these individual problem areas an attempt has been made in the Report to recommend effective action for implementation. These various problems and the suggestions connected with them appear in the paragraphs that follow.

Organisational Set-up

The successful operation of Citrus Marketing Board, Vegetable Producing & Marketing Board, and Agricultural Produce Export Corporation (Agrexco) of Israel, Jamaica Banana Board, Australian Apple & Pear Marketing Board and Kenya Fruit & Vegetable Marketing Board highlights the need and efficacy of institutional development in the horticultural production and export trade. (The Report embodies salient features of these organisations).

At the present stage of horticultural and marketing development in India, it is difficult to visualise the possibility of private trade undertaking the difficult task of nurturing, expanding and developing the export markets in fresh fruits and vegetables on a large scale. In most cases the problems will need to be tackled right from the stage of production through procurement, grading, packing, etc. to that of placing the produce in the consuming markets in a systematic manner. Further, the export promotion of fruits and vegetables will need to be based on 'Package Programme' approach.

Against this background it is considered that there is need for creation of three All-India Organisations - one for augmenting exports of bananas, another for developing exports of other fruits and vegetables and the third for effecting accelerated exports of processed fruit and vegetable items. A separate organisation is suggested for bananas alone in view of the complicated operations inherent in their exports, the large scale expansion of exports envisaged in the next seven years, and its long range potential. The structure and functions of the proposed organisations are briefly discussed below:

Banana Development and Export Corporation. For the development of banana exports on an integrated basis a Central organisation - Banana Development and Export Corporation - has been suggested which should be set up in the shape of a commercial corporation. It is suggested that the Corporation should be modelled on the lines of the Jamaica Banana Board, with due alterations. (The Report embodies the Constitution of Jamaica Board, Memorandum of Association of All Island Banana Growers Association Ltd, Jamaica, the Jamaican Banana Insurance Law and details of quality control in Bananas.) Initiative for setting up this organisation should be taken by the Ministries of Food and Agriculture and Commerce, Government of India, in consultation with the States which have interest in the production and exports of bananas. The Corporation should be developed in such a manner that existing organisations could be merged into it by participating in the share capital. It will be desirable to secure association of the producers with the Corporation but the association of the cooperatives of producers should

receive preference. Following are some of the major functions which would need to be undertaken by the proposed Export Corporation:

- i) Organisation of field tests for determining the appropriate varieties which will be most suited for cultivation in the respective areas from the point of view of exports;
- ii) Selection of suitable areas for development of production;
- iii) Establishing rapport with the co-operatives of growers as well as individual growers for securing supplies on long-term basis;
- iv) Provision of necessary inputs, financial assistance and credit to the growers' cooperatives and growers;
- v) Effective promotion and publicity measures.

Fruits and Vegetables Export Corporation. The Survey has revealed that prospects for exports of fresh fruits and vegetables from India are considerable. For items like mangoes, lychees, grapes and strawberries and vegetables like aubergines, capsicums, onions and french beans, ready markets are available in Europe and Asia, and if the existing potential has remained untapped so far, it is mainly because of the lack of organised effort in the past. There is therefore a strong case for the creation of a central agency - Fruits and Vegetables Export Corporation - to organise production, procurement and export marketing of selected fruits (other than bananas) and vegetables. The Corporation, it is suggested, may be set-up on the model of AGREXCO of Israel. While the structure of this Corporation will be similar to that of Banana Corporation, its functions inter alia will include:

(Next page)

- i) Instituting necessary research activities in cooperation with the other professional organisations in order to improve the efficiency and productivity of the horticultural industry in India;
- ii) Organising production of the required fruits and vegetables on a planned basis, and according to seasons, regions and varieties;
- iii) Providing technical guidance to the producers and producers' co-operatives on improved methods of cultivation;
- iv) Provision of necessary inputs, financial assistance and credit to the growers' co-operatives and growers;
- v) Creating a national trade mark for the Indian Fruits and Vegetables and undertaking publicity programme on a regular basis in the foreign markets.

Processed Fruits and Vegetables Exporters' Consortium. Having regard to the highly competitive nature of international trade in processed fruits and vegetables, there is great need of bringing about effective regulation of export marketing. The success of countries like Australia, South Africa and Malaysia in this field is mainly attributable to the efficient functioning of powerful marketing boards which exercise effective control over the entire range of operations, including fixation of floor prices.

Taking the existing factors and problems into consideration it is suggested that ways and means should be explored for encouraging the formation of a Consortium of processors and exporters which could evolve a unified approach to marketing; preferably undertaking marketing of products under a common brand and at agreed prices. The Consortium should have the authority to ensure conformity

of products to accepted standards. The Consortium will be the appropriate agency to draw upon the resources of the Marketing Development Fund of the Government of India for opening overseas offices, undertaking overseas publicity and carrying out market surveys.

If the formation of a separate consortium may for any reason be not feasible in the short run, the functions of the existing Processed Foods Exports Promotion Council should be suitably altered so that effective regulation of export marketing becomes possible.

Production

Varieties. Production of suitable varieties constitutes a basic prerequisite for developing export markets on a continuous basis. For instance, world trends in banana trade show a definite shift in favour of Cavendish varieties like Lacatan, Valery and Giant Cavendish, which are not currently grown in India. In respect of oranges, India does not cultivate varieties like Washington Navel, Shamouti, Satsuma (for canning purposes), Valencia Late etc, which are presently in demand in international markets. In the case of peaches, the production of which is small, India does not produce varieties like Cardinal, J.H. Hale, Vivian and Everts. Varieties of melons such as Honey Dew, Ogen and Charentais preferred in European markets are not commercially produced in the country. White fleshed Spanish variety of onions, not presently cultivated in India, is likewise preferred in world markets. Varieties

of tomato, such as San Mrazano and Roma, suitable for manufacture of peeled whole tomatoes and tomato concentrates produced currently in Italy and USA are not at present grown in India.

It follows from these examples that it is of vital importance to develop the production of suitable varieties of fruits and vegetables, including strains of established varieties adapted to local conditions, with a view to building up the horticultural industry in the country on modern lines. Varieties chosen should be vigorous in growth, heavy yielding (both in field and processing), resistant to pests and diseases and such as can withstand the hazards of long haulage. The Survey has estimated the requirements of nurseries (bananas, pineapples, Satsumas and others) at Rs 15 million over the next 5 years.

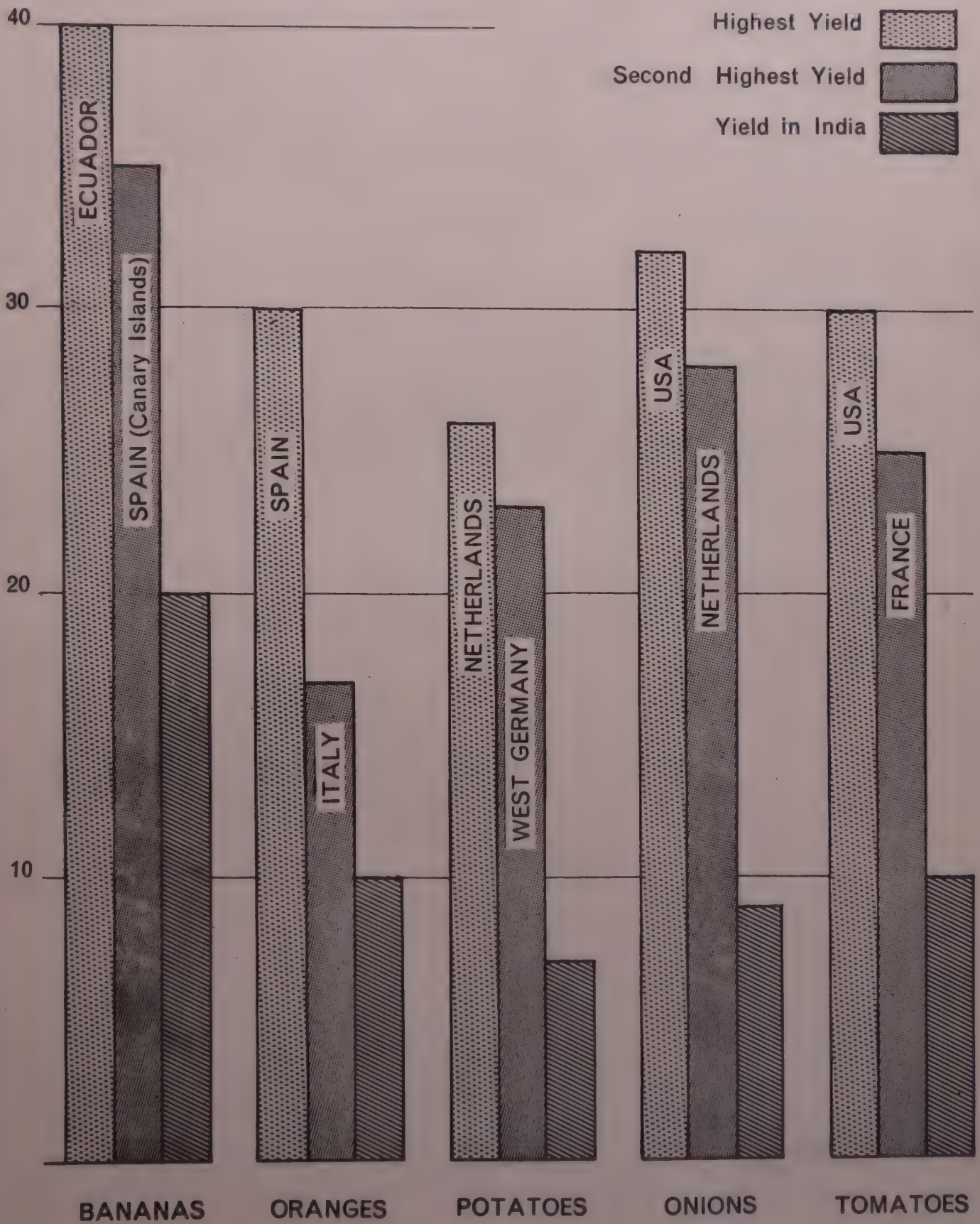
The Indian Council of Agricultural Research and the State Horticultural Departments, together with the National Seeds Corporation, should make vigorous efforts to evolve requisite varieties and take effective steps to extend their cultivation.

Yields. By application of modern technology and scientific cultural practices, the major supplying countries of the world have been able to achieve high field yields and processing yields in respect of many fruits and vegetables. For instance, the field yield of oranges (Washington Navel) obtained in Spain is about 30 tonnes and in Italy 17 tonnes as against 10 tonnes (Mosambi) per hectare in India. In respect of pineapples, whereas the yield in Philippines

COMPARATIVE YIELDS OF SELECTED FRUITS AND VEGETABLES

1965

(Tonnes per Hectare)



(canners' estates) and Ivory Coast ranges from 60 to 70 tonnes per hectare, it is only 12 to 15 tonnes in India. The yield of onions per hectare is 32 tonnes in United States and 28 tonnes in the Netherlands while in India it averages only 9 tonnes. In the case of potatoes, as against 26 tonnes per hectare obtained in Netherlands, the yield in India is only 7 tonnes. The tomato cultivation in major producing countries like USA, Italy and France has been developed to the extent of yielding 25 to 30 tonnes per hectare in contrast to the average yield of 10 tonnes in India.

It is necessary to launch upon a vigorous drive for raising the general level of field yields of major crops in demand in the overseas markets to withstand competition from world's leading suppliers. The Survey emphasises the need for stepping up the current yield of pineapples, among others, from 15 tonnes per hectare to 45 tonnes by 1975, bananas from 25 tonnes to 30 tonnes, apples from 7 tonnes to 15 tonnes, onions from 9 tonnes to 20 tonnes, tomatoes from 10 tonnes to 25 tonnes and potatoes from 7 tonnes to 15 tonnes. Besides, it envisages commercial production of mandarin oranges yielding 15 tonnes by 1975.

Cultural Practices. Equally significant in securing quality produce are methods of cultivation and harvesting. In the canners' estates in Philippines, for instance, the yield per hectare is one of the highest in the world averaging 65 tonnes, though in other parts of the country yield is as low as 10-12 tonnes per hectare. Further, through application of suitable hormones, availability of the fruit round the year is ensured. Thus, research undertaken on a continual basis to ascertain the optimum number of

plants per hectare, composition and dosage of fertilisers to be applied, utilisation of pesticides and insecticides, etc. has paid rich dividends in the advanced countries. The Indian Council of Agricultural Research should intensify its efforts to bring about improvement in the methods of horticultural cultivation in India, so as to step-up yields and ensure quality of the produce. The Survey envisages an investment of Rs 160 million for intensive development of existing areas and for bringing new areas under horticultural crops, over the next 5 years.

Methods of Harvesting. Efforts are continually being made in the advanced countries to introduce mechanical harvesting wherever possible. For instance, the 'palmetta' system originally developed by Italy for peaches is becoming increasingly popular and is being extended to other fruits. Further, mechanical harvesting of tomatoes, which essentially contributed to the revival of the Californian tomato industry by cutting the harvesting costs by 50%, is gaining increasing importance. Though these labour saving devices are not of immediate relevance to the Indian circumstances, they should be kept in view to bring about improvement in the harvesting methods from time to time.

Procurement. Structural changes in the fruit and vegetable marketing system have brought in their wake a new complexity in the methods of procurement. The old order - from a small individual farmer through the itinerant merchant through the terminal market to wholesaler/exporter - no longer prevails in most of the supplying countries. Instead, the farmer directly sells to cooperatives, corporate organisations or processors under contractual obligations. This has led to a healthy integration of production, procurement and marketing, resulting in large-scale operations concentrated in fewer

hands. The French SICAs (Societe d' Interet Collectif Agricole), Spanish Syndicates (Syndicat Des Fruits et Produits Horticoles) and British Producers' Co-operatives are indicative of this growing trend. Growers should be encouraged to form cooperatives which should be affiliated to the proposed Fruits and Vegetables Export Corporation.

Ceiling on Land Holdings. Significant improvements have been achieved in major supplying countries in yields as well as quality of the fresh produce, through large scale operations facilitating intensive cultivation on scientific lines. These improvements are of equal significance to the processing sector as to the fresh sector of the horticultural industry, and many leading overseas processors have their own plantations/farms. In particular, vertical integration of operations has made material contribution to economies in production costs in the world pineapple processing industry. Pineapple canneries in Malaysia, for instance, are statutorily required to own a minimum plantation of 1,500 acres (607 hectares) each, while pineapple packers in Taiwan are required to ensure that at least 30% of the total requirements of fresh fruit are met from own plantations.

It is evident that land holdings should be of a minimum economic size, to facilitate application of modern techniques of cultivation. In this context, the existing ceilings on land holdings, at 25-30 acres in most States, do present a problem. While certain exemptions are allowed in respect of orchards, neither in all States nor uniformly, no exemption is made in respect of

vegetable crops. Besides, although there are provisions in certain State acts, under which acquisition of adequate holdings by processing units appears possible, no such scope seems to exist in respect of holdings for raising horticultural crops intended to be marketed in the fresh form.

In view of the complexities involved in the problem, it is recommended that a high-level conference should be convened, under the auspices of the Planning Commission, of senior representatives of Departments of Agriculture of the Centre and all States and Union Territories to determine what additional measures, from legislation and other standpoints, need to be taken, in order to facilitate acquisition of holdings of adequate size, which represents an important prerequisite for building up a modern horticultural industry in the country.

Transportation and Warehousing

Road and Rail Transport. The use of refrigerated trucks and air-cooled rail wagons is extensively witnessed in major supplying countries, both for internal movement of produce and for export to the neighbouring countries. European countries, for instance have pooled their refrigerated and air-cooled wagons and have formed an inter-governmental organisation, International Frigovifique (INTERFRIGO), to manage their operations efficiently. Similarly, the refrigerated trucks are operated by TRANSFRIGOROUTE EUROPE throughout the Continent on identical lines. It is recommended that the Indian Railways, in consultation with the proposed Banana Development and Export Corporation and the Fruits and Vegetables Export Corporation, should acquire adequate number of refrigerated/air-cooled wagons and

organise a common pool for efficient movement of the fresh produce. The Survey proposes an investment of Rs 15 million for acquiring 20 refrigerated trucks and 50 air-cooled wagons during the next 5 years.

Refrigerated Ships. Lack of adequate shipping facilities in India represents one of the major handicaps in the way of increased exports, particularly of fresh fruits and vegetables. Discussions with importers in Kuwait, Singapore and Malaysia have confirmed that there is considerable scope for stepping up exports of different varieties of fresh fruits and vegetables, provided there is a fast and efficient shipping service between India and the West Asian and South East Asian countries. It is estimated that with a moderately fast ship (16 to 18 knots), it should be possible to cover the distance within 100 hours. It is suggested that the Shipping Corporation of India should, in consultation with the proposed two Corporations, acquire and ply fast moving ships with sufficient provision for refrigerated cargo.

Major suppliers of bananas like Ecuador, Ivory Coast and Honduras ply their own banana boats equipped with horizontal cooling system, with capacities ranging from 2,000 to 5,000 tonnes and speeds between 16 to 21 knots and upward. Chartering of banana boats by leading exporting countries on a long-term basis is also a common feature. Chartering of such boats is vital for large scale expansion of India's exports of bananas.

Air Shipments. In recent years, shipment by air has become fairly common. Air shipments of Californian fresh fruits and vegetables, for instance, totalled 14.2 million kg billing weight (10.7 million kg nett weight) during

1966. The Sea Bound World Airlines, which operates cargo planes moved 500,000 kg of fruits and vegetables, during the first six months of 1967. Israel has been airlifting, on an average, 100-150 tonnes of avocados, strawberries, capsicums, aubergines and salad type vegetables daily to the European markets, for the past two years. It will be advantageous for India to follow the same strategy, especially with regard to mangoes, lychees, strawberries, grapes, capsicums, French beans and aubergines. However, considering the element of high cost of freight - \$ 0.45 per kg to UK, which is almost equal to the acceptable c.i.f. price for mangoes - it will be necessary to offer adequate subsidy on freight in the initial stages. The objective should be to create base markets for eventual expansion, when exports grow into sizable volume and adequate refrigerated space coupled with regular shipping services becomes available. All air shipments of perishables to European markets should, however, be palletized or packed in containers.

Warehousing and Cold Storage Facilities. Major supplying countries, as a rule, ensure adequate provision of warehousing and cold storage facilities at the packing houses, assembling points, rail and road heads and loading and unloading ports and terminal markets. In the absence of such facilities in India, not only does wastage occur to the extent of some 30% of the aggregate production of fruits and vegetables, but domestic and export marketing is rendered costly and difficult. The Survey has estimated an investment of Rs 7.5 million for establishing 15 warehousing and cold storage centres over the next 5 year period.

Processing

Sugar. The controlled price of about Rs 170 (\$ 23) per quintal, at which sugar is made available to the industry for export purposes, is three to four times high as compared to the prices at which other countries obtain sugar for export purposes. For instance, among the Survey countries, price at which sugar is made available to processors for export purposes ranges from \$ 6 per quintal in France and UAR to \$ 10 per quintal in Spain and Singapore. Sugar is provided to the processing industry at a uniform price of \$ 8 and \$ 10 per quintal in Denmark and Singapore respectively, without any discrimination between the domestic and export markets. On the other hand, in Lebanon, sugar is made available at the rate of \$ 9 per quintal for export production, as against \$ 20 per tonne otherwise payable. The discrimination between export and domestic markets is more pointed in UAR, where sugar is offered for export purposes at \$ 6 per quintal as against \$ 36 per quintal for the domestic market.

The cash subsidy allowed on sugar-based products does not compensate adequately for the differential obtaining between the prices in India and other competing countries. Furthermore, while sugar is made available at controlled price for export purposes, exorbitant prices of about Rs 400 per quintal have to be paid for requirements relating to the domestic market, which is more important to the processing industry at present. The high prices at which the products have consequently to be offered in the domestic market have been responsible for the stunted growth of the domestic demand. It is therefore necessary that adequate

assistance should be forthcoming from the Government in this respect.

Considering that a sound domestic base is essential for sustaining the export effort of the industry, it is recommended that the entire requirements of the processing industry, covering domestic as well as export markets, should be made available at controlled price. It may be mentioned that the total annual requirements of sugar for the processing industry amount to no more than 15,000 tonnes, which represents less than 1% of the total output of sugar in the country. The analogy of pharmaceutical industry for which sugar is made available at controlled price to meet the entire requirements, is relevant in this context. It is important that ways and means should be considered for supplying the sugar at controlled price for the domestic and export requirements of the processing industry. The availability of sugar at controlled price for this total requirement alone will enable it to derive the advantages of larger production for developing competitive capacity in the export markets.

As regards the quality, adequate supplies of carbonation sugar are still not available to the industry although the unsuitability of the sulphitation sugar for processed products has been pointed out time and again. Besides, the grades available at the controlled price are usually not above 'C'. In order to bring about improvements in the quality of output, it is essential that top grades of sugar, comparable to the canners' sugar commonly used in other countries, should be made available to the industry at controlled price.

Cans. Cans represent a major cost element, accounting for 30 to 40% of the total cost of production in respect of most processed products. Can costs therefore merit close attention in any effort to secure reduction in production costs.

Current tinsplate requirements of the processed fruits and vegetables sector, estimated at 5,000 tonnes, are being met entirely from imports as domestic production of the particular type of tinsplate required has not come up to acceptable standards yet, mainly because of the high proportion of phosphorous and silicon contents in the base steel used. Till such time as the requisite improvements in domestic production could be brought about, there seems to be no alternative to continued dependence on imports.

There are wide variations in the prices of tinsplate imported from different sources, depending upon the availability of free foreign exchange and aid funds. USA is the costliest source, average price payable being about Rs 2,000 per tonne c.i.f. irrespective of the terms of payment. Imports from other sources like Japan, Netherlands, West Germany and UK are considerably cheaper, average c.i.f. price varying around Rs 1,250 per tonne, for tinsplate of comparable quality, when payment is made in free foreign exchange. But prices are pegged up considerably higher, upto about Rs 1,600 per tonne, when imports are effected under credit arrangements. It may be mentioned that about 20% of the imports during 1967-68 were financed from free foreign exchange resources, the balance having been covered by aid funds: approximately 40% from USA and the balance 40% from Japan and Netherlands.

Higher c.i.f. prices lead to a proportionate rise in the incidence of customs duty, which is levied at the rate of 27½% ad valorem, although the countervailing excise duty remains unaffected at Rs 375 per tonne. Consequently, the

difference in landed cost can exceed Rs 1,000 per tonne, depending upon the source of imports.

The export drawback on tinplate at the rate of Rs 888 per tonne more or less covers on the average the customs and excise levies, making can prices for export requirements by and large comparable with international prices. However, the procedure for payment of drawbacks needs to be streamlined so as to avoid the inordinate delays currently being experienced by exporters. Frequent revisions in the drawback rates should be avoided, and when a revision is made, it should be done sufficiently in advance or at the end of peak canning operations, so as to spare the exporters avoidable inconveniences. Prices of cans for meeting the requirements of the domestic market, however, remain exorbitantly high, in the absence of any such assistance, resulting in retarded growth of the domestic demand. Considering that a sound domestic base is essential for sustaining the export effort, it is recommended that imports of tinplate, to meet the entire requirements of the processing sector (which currently amount to only about 5,000 tonnes against the total of 65,000 tonnes, representing the aggregate import requirements of all industries) should be financed, as far as possible, with free foreign exchange, so as to bring down the import prices of tinplate, and thus secure reduction in can prices.

Apart from raising the quality of tinplate currently produced in the country, efforts should be made to catch up with latest improvements in technology. For instance, double cold reduced tinplate, which is considerably lighter and more economical than the conventional plate, is becoming increasingly popular in countries like USA. Facilities should be provided for producing lithographed cans in the country, which are being increasingly used in world markets by allowing adequate imports of the requisite steam-resistant inks, varnishes, coatings etc., till such time as these materials can be produced indigenously.

The Survey estimates that commensurate with the targets of exports proposed, requirements of tinplate would amount to about 2,500 tonnes by 1970-71 and 30,000 tonnes by 1975-76, as against the current export demand of 1,000 tonnes. If the likely rise in requirements of the domestic market are also taken into account, total demand of the processing sector for tinplate would be much higher. Apart from ensuring adequate supplies of tinplate, there is need to examine whether the existing can fabrication capacity in the country would be sufficient to meet the additional requirements. In the event of expansion of capacity, which will probably be necessary, advantages that can accrue from decentralization of the fabrication industry merit consideration. Fabrication units located in the vicinity of processing units would help avoid the element of added costs involved in transportation of the empty cans over long distances from the fabrication factories to the processing units.

Corrugated Boxes. Corrugated board is one of the most commonly used packing media, in view of its versatile nature making it suitable for packing a wide range of products, amenability to high speed automatic operations, low cost, light weight and ease in stacking and handling. Major supplying countries are almost universally packing fresh and processed fruits and vegetables in corrugated boxes for domestic as well as export markets.

While appreciable progress has been made in recent years, the Indian corrugated industry has a long way to go to catch up with the modern trends in this field. Carton costs in India are twice as high compared to those in the advanced countries, and considerable improvements are called

for in quality. The use of corrugated cartons in packing fresh fruits and vegetables is negligible in the country at present. Considerable proportion of exports of processed products, particularly mango juice and nectar, goes in corrugated cartons, although their use in the domestic market is limited. The Indian Institute of Packaging has recently succeeded in persuading the Railway Board to accept corrugated cartons containing tinplate containers on a trial basis at Railways' risk. Depending upon the eventual acceptance of the corrugated packing by the Railways, a spur in domestic demand for this packing medium is expected, leading to possible reduction in carton costs.

Leaving out fresh vegetables like onions and potatoes packed mostly in gunny bags and string bags, and fruits like oranges and mandarins, for which bruce boxes represent the accepted type of packing, it is expected that a substantial proportion of exports of fresh and processed fruits and vegetables will take place in corrugated boxes. The Survey estimates the corrugated board requirements for exports of fresh and processed fruits and vegetables to go up from about 200 tonnes in 1967-68 to 15,000 tonnes by 1975-76.

Machinery & Equipment. Machinery and equipment used by the processing industry in India leaves much scope for improvement by way of rationalisation and modernization. Equipment like automatic filling machines leads to considerable savings in costs through minimization of wastage in the production process and great efficiency in operations. Equipment like automatic labelling machines (which are commonly used in other countries) is necessary for giving a proper finish to the pack.

Adequate foreign exchange should be made available for importing such equipment. There are other expensive types of machinery, such as vacuum evaporators, which can be advantageously manufactured within the country by inviting technicians from abroad. Similarly, for setting up new processing plants or expanding existing ones through installation of new modern equipment, it may be advantageous in certain cases to secure the services of plant managers and other technical personnel who can offer expert advice on lay-out etc for a short period. The Government should offer requisite facilities for importing such technical services wherever necessary.

The Survey has assessed the requirements of the processing industry and envisages an investment of about Rs 110 million over the next 5 year period. It is contemplated that a) assistance will need to be given to 10 selected units for modernisation, rationalisation, expansion etc, b) 8 new processing units will need to be set up for the manufacture of orange segments, pineapple products, and c) provision will need to be made for development of ancillary industries like packaging, machinery manufacture, etc.

Marketing and Distribution

Marketing Arrangements. It is essential to establish effective marketing facilities in consuming countries. For example, the Citrus Marketing Board and Agricultural Produce Export Corporation (Agrexco) of Israel have exclusive agents in all the European markets for organising auctions and distribution of different fruits and vegetables. On the basis of market intelligence provided by the agents, Israeli export organisations adopt suitable

marketing strategies in terms of price fixation and sales promotion. Similarly, Australian Apple and Pear Board, Jamaica Banana Board, Kenya Fruits and Vegetables Marketing Board and South African Banana Board operate more or less on similar lines in European markets. In the case of bananas, all the major supplying countries have established tie-up sales arrangements with leading importers on a long-term basis for supply of stipulated quantities at pre-determined prices.

The trade in processed items is highly competitive, and unless established importers can be persuaded to take interest in products of new entrants like India, it will be difficult to gain successful entry in the European markets. Processed items are handled mostly by importers/associations and distributors/retailers-buying groups. In general, repacking units import their requirements directly under suitable tie-up arrangements.

The proposed two Corporations and Consortium should explore the possibility of marketing Indian products through the established channels of some of the leading foreign companies, especially in the case of processed items. For this purpose, suitable tie-up arrangements with major overseas distributors and repackers would be an appropriate strategy.

Common Brands. Major supplying countries market their fresh fruits and vegetables under a common brand name. 'Jaffa' oranges and 'Carmel' fruits (other than oranges) and vegetables of Israel, 'Chiquita' bananas of the United Fruit Company of USA, and 'Outspan' fruits and

vegetables of South Africa are some of the instances. The two Corporations and the Consortium recommended earlier should explore the possibility of promoting identification of India's fruits and vegetables exports through common brand names.

Distributors' Labels. The Survey has revealed that in many of the European countries, particularly West Germany, UK and Scandinavian countries, the most significant characteristic of food retailing relates to the sale of canned foods and vegetables under distributors' labels. It has been estimated, for instance, that over 40% of South African canned foods shipped to UK in 1966 were marketed under local buyers' labels. In West Germany, more than 25% of the South African and Australian canned goods are estimated to be sold under local German labels. This is an area which offers good prospects in the European markets. A number of importers contacted during the Survey showed interest in selling Indian items, including mango products, fruit juices and canned pineapples, under their own labels. India should select and adopt the practices utilised by other countries for expanding the export trade of processed products.

Price Systems. Prices of fresh fruits and vegetables are governed by several factors varying from country to country and commodity to commodity. For instance, the system of Reference Prices of ECM with regard to fresh produce is designed to safeguard the interests of the member countries. Banana prices, however, are generally fixed all the world over on the basis of long-term (including revolving, annual or biennial) contracts. In certain markets like Hamburg, Munich and Rotterdam, it is necessary to sell the produce

through auctions and in such cases fluctuations in prices are inevitable. As a new entrant, India has to cope with problems arising from such situations.

Sales Promotion

Sales promotion constitutes an important feature of fresh and processed fruits and vegetables marketing in Europe. Major supplying countries having large stakes in the consuming markets incur sizable expenditure aimed at promotion and publicity of their products. More important media utilised by the exporting countries include advertising in trade and consumer press, television, demonstrations, prize competitions, distribution of point-of-sale material and give-aways.

World's leading suppliers are spending huge amounts on brand publicity. Advertising expenditure on publicising fresh fruits and vegetables in UK in 1967, for instance, aggregated about \$ 600,000 of which \$ 400,000 were devoted for T.V. publicity and the remainder for press publicity. Of the total T.V. expenditure, Israel alone spent about \$ 250,000 for promoting 'Jaffa' oranges and grapefruits. 'SOPEXA', a semi-governmental body in France, incurred about \$ 200,000 during 1967 towards press publicity and organising 'French Horticultural Weeks' in the major European cities for popularising French fruits and vegetables. The National Syndicate of Fruits and Vegetables of Spain (Sindicato Nacional de Frutos Y Productos Horticolas) spent about \$ 1 million for promoting Spanish oranges in European markets in 1967.

Publicity in the field of processed fruits and vegetables is equally significant. For instance, publicity expenditure of three leading overseas sellers in UK alone has been estimated at \$ 2.5 million in 1967. Countries like Australia spend vast amounts of money on overseas generic publicity apart from the brand publicity carried out by individual exporters.

The above instances indicate the volume of financial support required for promoting exports of fresh fruits and vegetables in major world markets. India cannot hope to accomplish worthwhile horticultural exports without publicity expenditure of comparable size. Viewed against this background, the current annual expenditure of \$ 27,000 (of which 20% represents generic publicity carried out by the Processed Foods Export Promotion Council) on overseas publicity for India's processed products cannot be regarded as significant. No publicity is undertaken at present for fresh fruits and vegetables. It is imperative that adequate foreign exchange is made available for effective publicity and promotion for greater exports of fruits and vegetables, both fresh and processed. In the initial stages there will be need for incurring expenditure incidental to the introduction of India's fruits and vegetables in selected Survey countries to the extent of Rs 1.5 million.

The Survey envisages an outlay of Rs 40 million, over the coming 5 years, towards trial shipments, product testing and test marketing, consumer surveys, publicity and other promotional activities.

Export Assistance

In most countries, various types of specific inducements are offered to promote exports of fresh as well as processed fruits and vegetables. In major supplying countries of Europe, minimum prices are guaranteed by the respective Governments for exports of fresh fruits and vegetables. Allowing drawback of import and excise levies on tinplate and supplying sugar at concessional prices for export purposes is almost universal. In some countries, fiscal incentives are also offered: in Singapore, for example, corporate profit tax on export earnings is limited to 4% as against the rate of 40% applicable to profits accruing from domestic sales. Besides, considerable institutional support is forthcoming to publicity and promotion in most countries. For instance, SOPEXA a semi-government organisation in France, supports publicity and promotional programmes of private exporters upto a maximum extent of 80%, besides carrying out substantial generic publicity for the French horticultural produce in overseas markets.

There is scarcely any special type of assistance for exports of fresh fruits and vegetables from India, which largely comprise onions at present. However, realization of the substantial potential outlined by the Survey in respect of different horticultural crops will entail need of specific types of assistance, which should be considered on the basis of the merits of the situation. In particular, it will be necessary to offer, in the initial stages, adequate subsidy on air freight to tap the off-seasonal advantages offered by the European markets. Besides, adequate foreign exchange needs to be

released to facilitate effective publicity and promotion; this is an essential requirement for increased exports of processed as well as fresh fruits and vegetables.

Viewed from a strictly narrow angle, the export assistance offered in respect of cans and sugar is more or less adequate as compensation for the differential between internal and international prices. However, judging from the need of enabling the processing industry to develop a sound domestic base to sustain the export effort, additional assistance from the Government is called for. In particular, there appears to be a case for enlarging the scope of the cash assistance, which is basically meant to neutralise the differential between the controlled price and international price of sugar. It is suggested that as against the present rate of 3 - 12½%, cash assistance should be offered at the rate of 10% - 20% of the f.o.b. value, with a suitable sliding scale to provide for adequate incentive at different slabs of exports.

Tariff Commission Enquiry

The substantial rise in prices of cans (about 80%) and sugar (about 200%) since 1963, when the Tariff Commission held its last enquiry on the processed fruits and vegetables industry, has led to an exorbitant rise in domestic prices of the products, resulting in retarded growth of the domestic demand. The need for enabling the industry to develop a sound domestic base to sustain the export effort cannot be overemphasized. It is therefore suggested that the Tariff Commission should be requested to hold a comprehensive enquiry into the entire

structure of the processed fruits and vegetables industry, with particular reference to the need for offering suitable assistance to the industry in respect of major cost elements like cans and sugar.

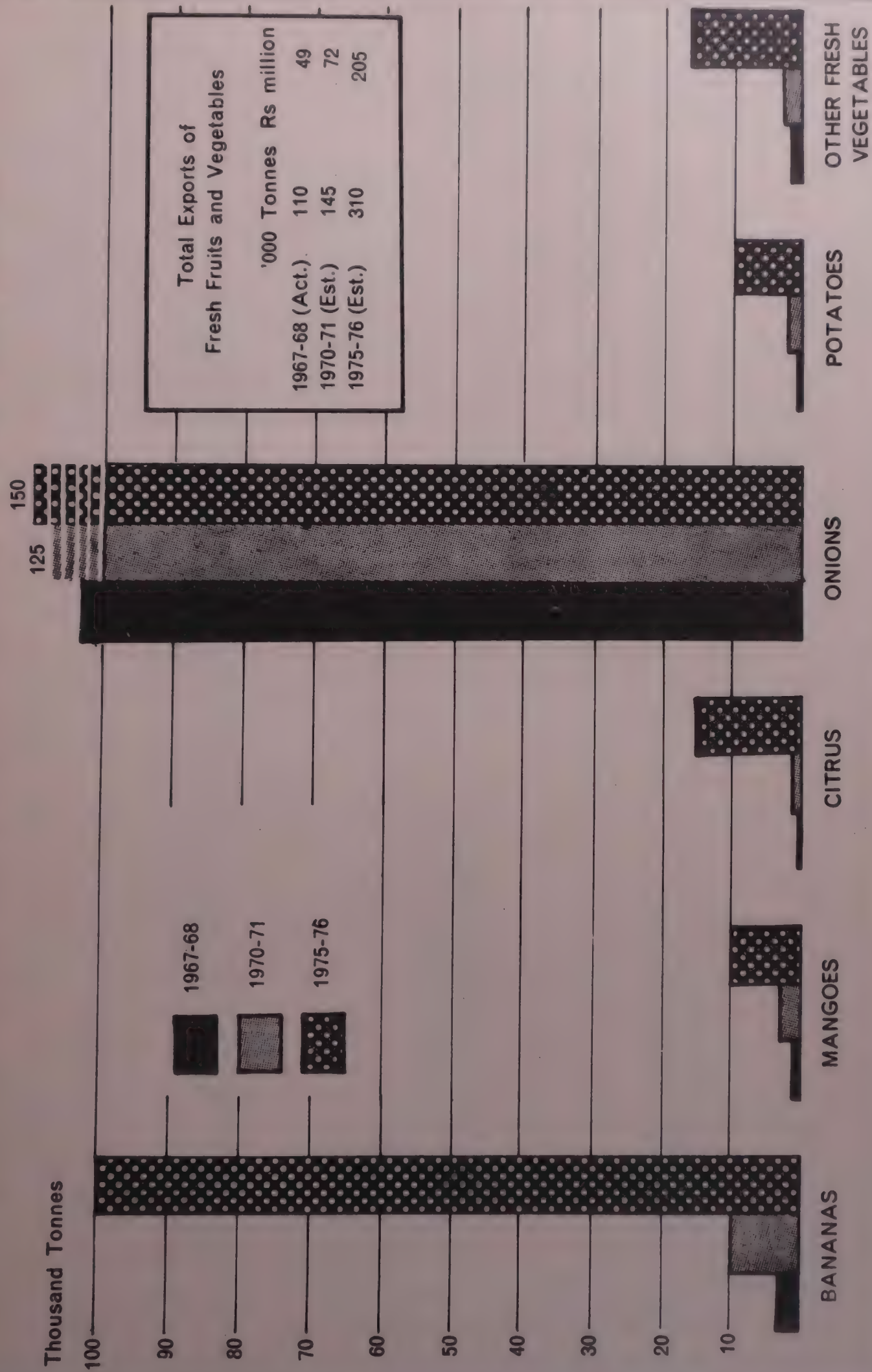
Priorities

The strategy for development should necessarily be based on a careful determination of priorities and considerations of selectivity. Onions, bananas, mangoes, lychees, grapes, strawberries, French beans, capsicums, aubergines, mango products, lychee wholes, canned vegetables like peas, beans and mixed vegetables, and pickles & chutneys have been identified by the Survey as the items having the maximum potential in the short term. From the medium term point of view, prospects offered by volume items like citrus fruits, white fleshed onions, potatoes, canned peaches, pineapples, apricots, mandarin orange segments and juices (particularly citrus concentrates) and tomato products are substantial. Besides, efforts should be made to explore possibilities of commercial production of crops like avocados, cultured mushrooms, asparagus and salad type vegetables, which offer good export prospects.

Feasibility Studies

Feasibility studies are expected to determine the scope of economic production and processing of individual products, identify the areas where they can be grown taking into account the soil and climatic conditions, and establish clearly the potential for development and export of each item in fresh or processed form of an internationally competitive level. It is suggested that a blue-print for

INDIA'S EXPORTS OF FRESH FRUITS AND VEGETABLES —PRESENT AND POTENTIAL



INDIA'S EXPORTS OF PROCESSED FRUITS AND VEGETABLES —PRESENT AND POTENTIAL

Thousand Tonnes

70

60

50

40

30

20

10



1967-68



1970-71



1975-76

Total Exports of Processed Fruits and Vegetables

	'000 Tonnes	Rs million
1967-68 (Act.)	6	18
1970-71 (Est.)	15	33
1975-76 (Est.)	140	295

CANNED FRUITS

CANNED
FRUITS

JUICES AND
NECTARS

JUICES AND
NECTARS

PULPS AND
CONCENTRATES

PULPS AND
CONCENTRATES

CANNED
VEGETABLES

CANNED
VEGETABLES

the development of fruits and vegetables industry in the country should be drawn up on the basis of suggested studies. (Some of the factors to be taken into account in undertaking feasibility studies are dealt with in the Report). The Survey has estimated an expenditure of Rs 5 million for conducting feasibility studies on potential export items including tomatoes, citrus, deciduous fruits and pineapples.

Export Targets

Considering the export prospects offered by different markets (surveyed and unsurveyed) and keeping in view the resource base available in the country and on the basis of the measures suggested above, it is estimated that exports of fresh and processed fruits and vegetables can be stepped up from 116,121 tonnes (Rs 67 million) in 1967-68 to 160,000 tonnes (Rs 110 million) in 1970-71 and 450,000 tonnes (Rs 500 million) by 1975-76.

Exports of fresh fruits and vegetables are expected to go up from 110,000 tonnes (Rs 49 million) in 1967-68 to the level of 145,000 tonnes (Rs 72.5 million) by 1970-71 and 310,000 tonnes (Rs 205 million) by 1975-76. Substantial rise is envisaged in exports of bananas, mangoes and citrus fruits. These three would in fact account for 80% of the total export earnings from all fruits in 1975-76. In view of the projected increase in exports, the share of onions in the total value of exports of fresh fruits and vegetables, which is currently as high as 86%, would be no more than 30% in 1975-76.

While the present exports of processed items are largely confined to mango products comprising mainly juice, nectar and pickles & chutneys, a sizable export volume of

other items like pineapple slices, mandarin orange segments, deciduous fruits and citrus and tomato concentrates is envisaged. As a result, exports of processed fruits and vegetables are expected to register a significant rise from about 6,200 tonnes (Rs 18 million) in 1967-68 to 15,000 tonnes (Rs 37.5 million) by 1970-71 and 140,000 tonnes (Rs 295 million) by 1975-76.

Investment

It is estimated that realization of the above targets would entail an investment of about Rs 400 million spread over the next five years. The envisaged investment would cover horticultural and technological research, feasibility studies, establishment of modern packing houses and processing units, modernisation of existing machinery and equipment, securing services of foreign technical experts, development of ancillary industries and sales promotion. Details of the suggested investment appear in the body of the Report.

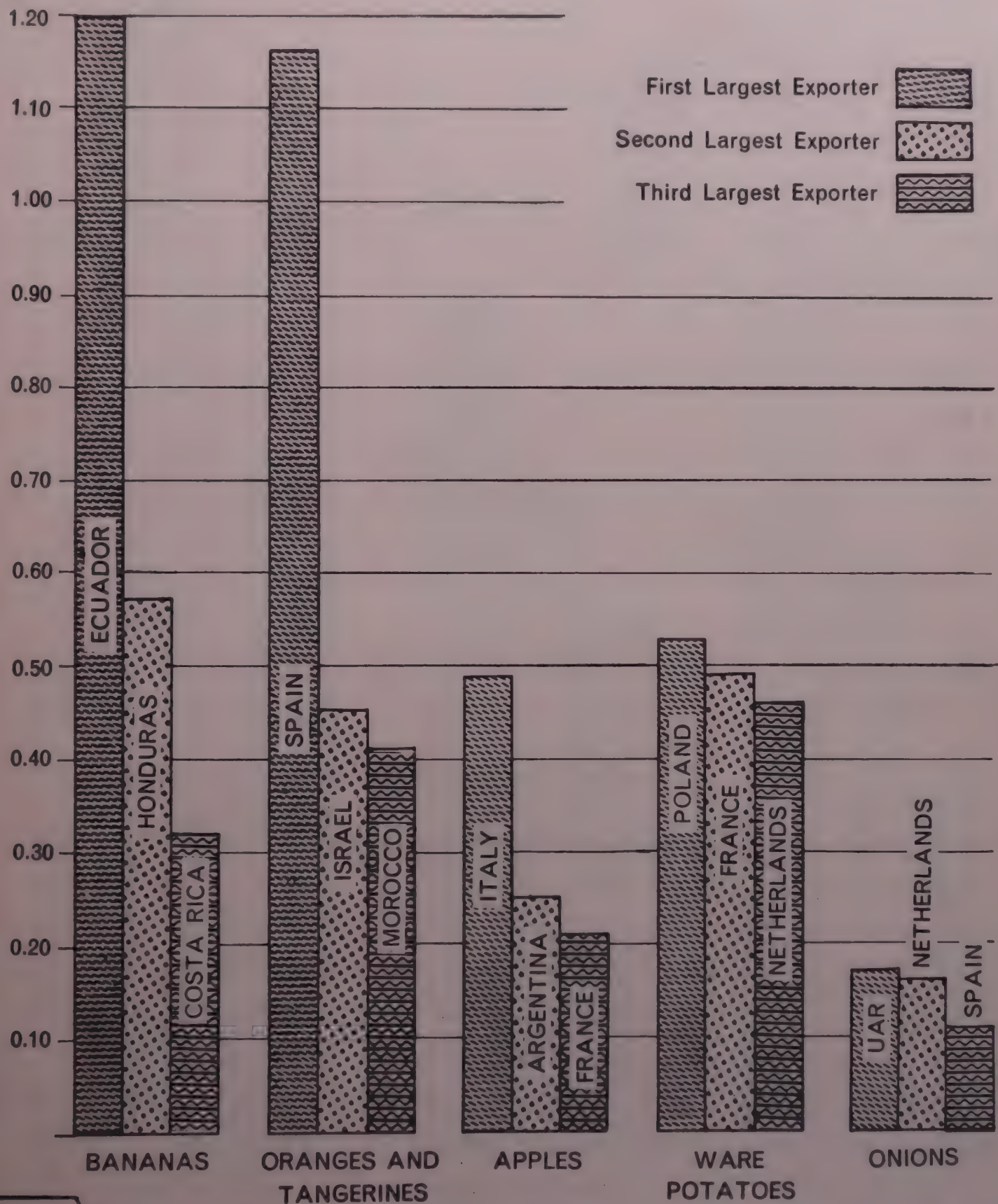
Foreign Investment

Taking into account the scarcity of local finance and limited resources of foreign exchange available, the possibility and mode of inviting foreign capital should be fully examined. The foreign capital would bring with it the latest machinery and know-how for the development of processing industry in the country. The instances offered by Philippines (American investment), Ivory Coast and Martinique (French investment) and Kenya and Ethiopia (German investment) are relevant in this context. Industry in these countries has been developed primarily to service

FRESH FRUITS AND VEGETABLES **—EXPORTS OF MAJOR SUPPLYING COUNTRIES**

Million Tonnes

1965



Total
World
Exports

4.73

3.60

1.98

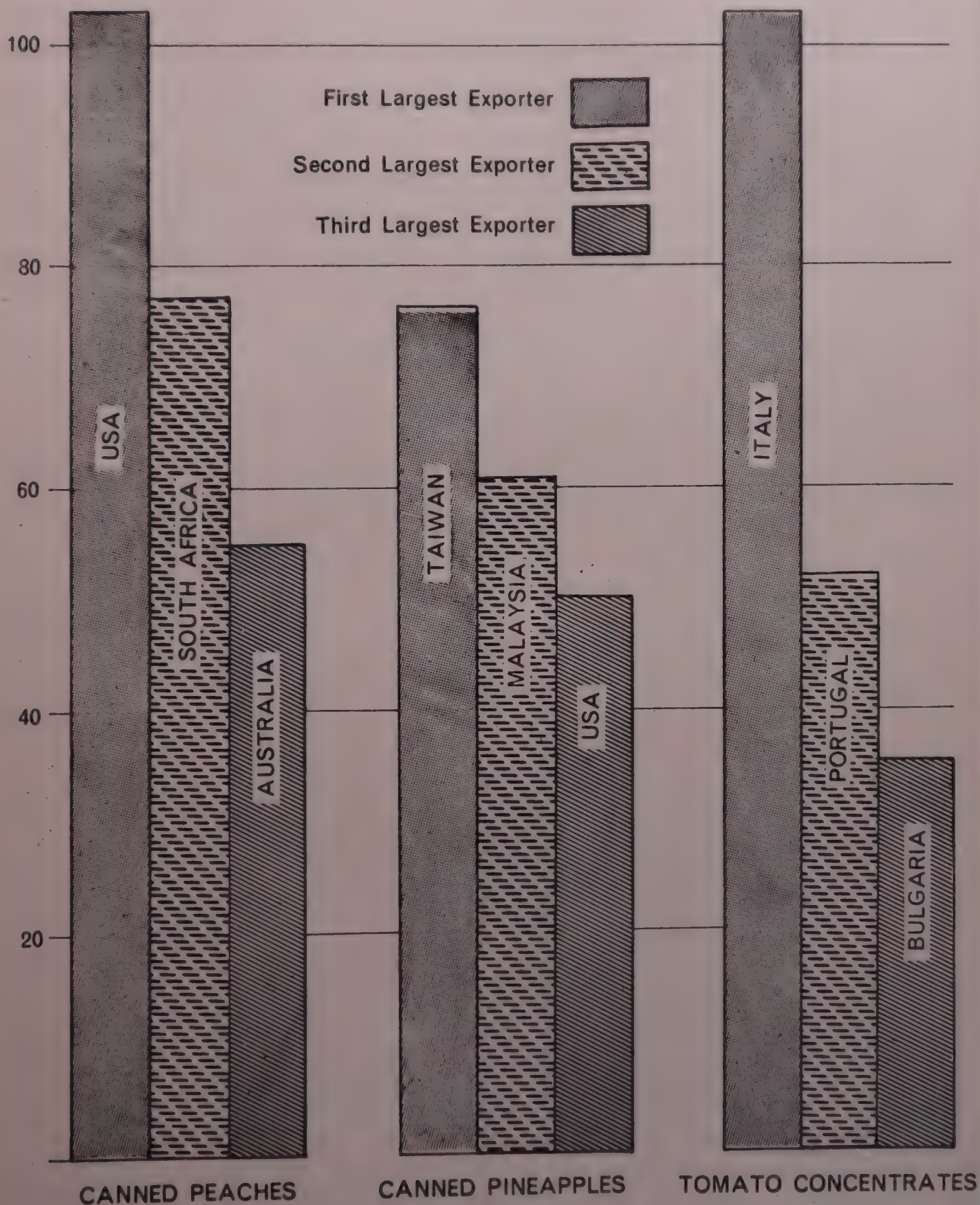
2.82

0.97

EXPORTS OF SELECTED PROCESSED FRUITS AND VEGETABLES — MAJOR SUPPLYING COUNTRIES

Thousand Tonnes

1965



Total
World
Exports

400

350

250

respective domestic markets of the principals whose consumption potential is very high. The Government should consider offering specific inducements to prospective foreign investors, such as removal of inhibitions relating to or liberal interpretation of the present Land Ceiling Act, simplification of procedures of and availability of facilities for repatriation of profits, etc.

Implementation of Recommendations

It is suggested that the Planning Commission should set up a high level Committee consisting of the representatives of the Union Ministries of Food & Agriculture, Industry, Commerce and Finance, with the association of selected horticultural experts from the States, for considering the recommendations embodied in this Report with a view to determining the priorities and effecting implementation.

The measures suggested in the Report essentially constitute medium term programme when viewed against the vast scope that exists in India for horticultural development and exports. It will be appropriate that for taking a long look ahead over the ten year period of the 5th and 6th Plans, a Horticultural Production and Exports Commission should be constituted for drawing up a bold and imaginative programme of development in the sector of fresh and processed fruits and vegetables.

COMMODITY REVIEW

BANANAS

Fresh Bananas

World Production. World production of bananas was of the order of 23.3 million tonnes in 1965. Central and South American countries account for two-thirds of the world output, major producers being Brazil, Ecuador, Venezuela, Honduras, Colombia, Panama and Costa Rica. India, with an annual production of 2.7 million tonnes, is the third largest producer, being next only to Brazil (4.5 million tonnes) and Ecuador (3.3 million tonnes). Others include Malagasy, Somalia, Central African Republic and Ivory Coast.

The world average yield per hectare has been estimated at 14.7 tonnes in 1965. Among the major producing countries, the average yield ranges from 13.1 tonnes in Honduras (15.7 tonnes in Ecuador and 19.0 tonnes in Brazil) to 20.9 tonnes in Venezuela. India, with an average yield of 13.9 tonnes, compares reasonably with other major producing countries. In concentrated areas of commercial production, such as Jalgaon in Maharashtra, North Arcot in Madras and Bardoli in Gujarat, the yield ranges from 25 to 30 tonnes per hectare.

The main banana varieties cultivated for export in different parts of the world include Gros Michel and Cavendish varieties such as Valery, Lacatan, Poyo, Giant Cavendish and Dwarf Cavendish. Gros Michel being susceptible to panama disease, recent trends in cultivation show distinct shift in favour of Cavendish varieties, particularly Lacatan and Valery. Both these varieties

are high yielders (40 tonnes and 30 tonnes per hectare respectively) in major producing countries like Ecuador and Ivory Coast and enjoy a wide consumer acceptance in North America and West Europe, which account for the bulk of world imports. The principal variety grown in India at present is Dwarf Cavendish. For effecting greater exports, the Dwarf Cavendish variety needs to be replaced by Giant Cavendish or one of the other important varieties mentioned above.

World Trade. World exports in 1965 amounted to 4.7 million tonnes (\$ 416 million) representing 20% of the world production. Latin American countries dominate the world banana trade, with a share of 65% of the total exports. Ecuador, Honduras, Panama, Costa Rica, Colombia and Brazil are the principal exporting countries in Latin America in that order. Ivory Coast, Canary Islands (Spain) and Taiwan and Cameroons are important among other suppliers. Average CIF prices obtaining in the major markets range between \$ 125 and 150 per tonne; corresponding average FOB prices vary from \$ 50 to 60 per tonne (excluding cartons).

Even though India is the third largest producer of bananas and its field yields are fairly high, exports amounting to 8,000 tonnes in 1966-67 and 2,900 tonnes in 1967-68*, represent but an insignificant volume of the total world exports.

* Owing to closure of the Suez Canal in 1967-68, exports could not be effected to USSR, which provides a major market for Indian bananas.

Prospects for India. Imports of bananas into West European countries aggregate about 2.2 million tonnes (\$ 365 million), representing approximately 50% of the world imports, Ecuador, Colombia, Honduras, Ivory Coast, Cameroons and Somalia being the principal exporters at present. These suppliers have developed a highly specialised system of production, procurement, grading, packaging, handling and transportation, combined with efficient marketing arrangements at the receiving end.

Taking into account the projected demand of the major importing countries and considering the potential of increased production of bananas in India, the Survey has revealed that it should be possible for India to step up exports from the present level of 8,000 tonnes (Rs 3.7 million) - ignoring the decline in 1967-68 - to 10,000 tonnes (Rs 6 million) in 1970-71 and 100,000 tonnes (Rs 60 million) by 1975-76. Out of the projected exports of 100,000 tonnes by 1975-76, Japan alone can offer a market for 50,000 tonnes the balance being spread as follows: West Europe 20,000 tonnes, USSR 15,000 tonnes, Yugoslavia 8,000 tonnes and Gulf countries 7,000 tonnes.

For expansion of exports to this extent, certain specific measures will need be taken in the spheres of production and export marketing. The measures include, inter alia, i) organisation of production of suitable varieties in selected areas near port towns, ii) creation of adequate facilities for grading, packing and handling and iii) entering into suitable agreements with the foreign buyers. This calls for the setting up of a suitable

organisation, which would be in a position to pay the requisite attention to the development of the banana industry on the scale envisaged. At present, there are four organisations concerned with the banana industry in India: State Trading Corporation, Banana Fruit and Development Corporation, Gujarat State Fruits and Vegetables Marketing Federation and Jalgaon Banana Co-operative Marketing Federation. The State Trading Corporation in co-operation with the Banana Growers co-operatives in Gujarat and Maharashtra has done pioneering work in promoting banana exports from India during the past few years. A short resume of the efforts made by the STC is given in the Report. The efforts of these organisations including STC, have met only with limited success for lack of a comprehensive approach which is inevitably required for building up a large production base for mounting the export effort.

Banana Development and Export Corporation. Against this background, it is considered necessary that for the development of banana industry and for expanding exports there should be a Banana Development and Export Corporation dealing exclusively with bananas and concerned with the entire range of problems of this industry from the stage of cultivation to that of export marketing. The organisation should be set up in the form of a commercial corporation with Government participation in the share capital. Direct association of the producers with the Corporation should be secured for ensuring their full cooperation. Major functions of the Corporation should include the following:

- i) Organisation of field tests to determine the variety or varieties among Giant Cavendish, Lacatan, Valery and Poyo that will be most suited for cultivation under Indian conditions;

- ii) Selection of suitable areas for development of production;
- iii) Establishing rapport with growers or growers' cooperative societies for securing supplies on a long term basis;
- iv) Providing technical guidance to the producers in the matter of scientific cultivation, transporting and handling of the fruit;
- v) Setting up of packing houses and creation of necessary infrastructure (feeder roads, transportation ropeways etc.);
- vi) Provision of necessary inputs, financial assistance and credit to the growers/growers' organisations;
- vii) Ensuring manufacture and use of the right type of cartons for packaging;
- viii) Chartering of banana boats on a long term basis in order to keep up the delivery schedules and also to achieve overall economy in the ocean freight rates;
- ix) Entering into tie-up sales agreements with selected foreign buyers;
- x) Taking steps for effective promotion and publicity in the foreign markets.

The proposed Corporation should aim at bringing together under one organisation the various sectors of the industry, including agriculture, processing, packaging, transportation, marketing and financing, utilising the latest developments in research, technology and methods and systems of operations for developing a viable banana industry in the country. In setting up an organisation of this nature, it is suggested that the experiences of other major banana exporting countries like Jamaica, Somalia, Ivory Coast and Canary Islands in this field may be kept in view. Particular mention may be made of the

Jamaica Banana Board, set up in 1955, which has been very successful in infusing stability into the banana industry in the Island. (Details relating to the pattern of organisational development in different countries are discussed at length in the Report).

While the development programme is of greater relevance to the medium term objective, it is important that the following measures should be taken for maximum exploitation of the existing potential of banana exports from India:

- i) As the Dwarf Cavendish variety is more acceptable in the Gulf countries and USSR, particularly in the short run, India should try to expand its exports to these markets;
- ii) During the Survey it was brought to notice by the trade in Kuwait and Bahrain that India should adopt packaging of banana bunches individually in paper bags as is being done by Somalia. This merits careful consideration;
- iii) During the Survey it was particularly noticed that India has not made any attempt to enter the growing market of Yugoslavia, though provision exists in the bilateral trade agreement for export of fresh fruits and vegetables. The Dwarf Cavendish variety will at present be acceptable. Trading enterprises contacted during the Survey evinced interest in securing supplies of bananas from India. The State Trading Corporation should initiate action to tap this potential;
- iv) It has been reported that the recent trial shipment of bananas to Japan (December, 1967) resulted in heavy discount in prices owing to discolouration, rotten or broken necks)

stem rots in hands and spreading of fingers (called 'Octopus' hands). Immediate steps need to be taken to ensure that recurrence of such defects does not take place in the future.

Banana Products

Banana powder, chips, dried figs, canned slices, banana puree and cocktails represent the main products processed from bananas. Volume of production and international trade in respect of these products is insignificant, at present. It is estimated that total world trade in these items is around 5,500 tonnes, with Dominican Republic and Ecuador accounting for over 90% of the world exports. USA, West Germany, Japan, Switzerland and France are the main importing countries of processed banana items.

In India only one modern factory in Jalgaon has been set up for producing banana powder. According to reports available, it is yet to commence production on commercial basis. On the basis of the Survey, West Germany appears to offer some limited prospects for this product. It is also understood that Japan offers a large market for this item, which should be exploited. A detailed market survey should be undertaken in West Germany and Japan for ascertaining the market potential for banana powder.

CITRUS

Fresh Citrus

Species and varieties of citrus fruits are classified into three groups: (1) oranges, mandarins, tangerines, clementines and similar types; (ii) lemons

and limes; (iii) grapefruits. The first group is the most important, accounting for about 80% of the total world citrus output, the other two making up the remainder in roughly equal proportions.

World Production. World production of citrus fruits in 1966 has been estimated at 26.5 million tonnes comprising 21.3 million tonnes of oranges, tangerines etc, 2.9 million tonnes of lemons and limes and 2.3 million tonnes of grapefruits. While principal producers of oranges and tangerines include USA, Brazil, Spain, Japan, Italy, India and Israel, lemons and limes are mainly grown in USA, Italy, India, Greece, Spain and Turkey and grapefruits in USA, Israel, Argentina, South Africa, Cyprus and Jamaica. (Citrus industry in Israel, Spain, Italy, Greece, Lebanon and Morocco is reviewed in detail in the Report).

India is one of the important citrus producing countries, with a total area of 1 million hectares and an annual production of 1.2 million tonnes. Mandarins and limes are major fruits, accounting for nearly 40% and 30% of the total citrus production in the country, the balance comprising largely sweet oranges. The principal producing States in India are Andhra Pradesh, Maharashtra, Mysore, Assam, Punjab and Rajasthan.

Field yields of citrus fruits in different countries range from 10 tonnes (Nagpur Santra) per hectare in India and 15 tonnes (Torocco) in Italy, to 28 tonnes (Shamouti) in Israel and 30 tonnes (Washington Navel) in Spain. The average yield of Satsuma variety of mandarins in Japan, at 20 tonnes per hectare, is a record for

commercial production of mandarins. Experiments in Coorg for raising seedless mandarins on a commercial scale have resulted in an average yield of 10 tonnes per hectare.

There is a wide variety of citrus fruits, each having its own quality characteristics. Early Navel, Valencia Late and Shamouti are well known among oranges, Marsh seedless; Pink and White seedless among grapefruits, and Eureka and Lisbon among lemons. The varieties of Indian oranges include Malta Blood Red, Mosambi and Sathgudi; Nagpur Santra, and Coorg mandarins are major varieties grown in the country. It has been reported that Washington Navel and Shamouti oranges could be cultivated in India on a commercial scale. Development of production of these varieties is a prerequisite for entering the export market for oranges.

World Trade. During 1965, world exports of citrus fruits amounted to 4.4 million tonnes (\$ 542 million), of which oranges, mandarins and clementines accounted for 3.5 million tonnes (\$ 422 million), lemons and limes for 0.6 million tonnes (\$ 83 million) and other citrus fruits for 0.3 million tonnes (\$ 37 million). West Germany, France, UK, Netherlands, Belgium-Luxemburg, Sweden, Switzerland, Austria, Eastern Europe and USSR absorb about 90% of total fresh citrus imports. Europe secures supplies of citrus fruits from Mediterranean countries during winter and from South Africa, Brazil and USA during summer. Although citrus imports during the summer months have considerably expanded in Western Europe, consumption continues to be at the peak during winter. Outside, Europe, major importing countries

include Singapore, Malaysia and Hong Kong. At present, India's share in world citrus exports is negligible.

Prospects for India. Current trends in international trade of citrus fruits indicate that adequate potential exists for Indian fruits in the European, West Asian and South East Asian countries. Considering the probable import demand in the buying countries, it has been projected that India should be in a position to export 5,000 tonnes of oranges and 5,000 tonnes of limes by 1975-76, provided necessary steps are undertaken for developing a viable export industry in the country.

Development of production of varieties such as Washington Navel and Velencia Late, which dominate the world trade, is a sine qua non for entering the export markets for oranges. In the short term, however, India can tap the potential available in the neighbouring countries, such as Singapore, Malaysia and Hong Kong, total imports of which amount to about 90,000 tonnes worth \$ 18 million. Importers contacted in Singapore during the Survey have evinced interest in Nagpur Santras, Mosambi and Malta from India. Depending upon the market acceptability of these varieties, which should be ascertained through trial shipments, it is considered possible for India to export about 500 tonnes by 1970-71, and 10,000 tonnes by 1975-76. Acceptable c.i.f. price would be around \$ 200 per tonne. Oranges are to be packed in bruce boxes or cartons, about 20 kg per pack.

India has a large production base for limes. Vigorous efforts should be made to export them to European and West Asian markets. According to importers

contacted during the Survey in West Germany and Switzerland, consumer preference for limes could be developed, in view of the fact that they are more juicy, smooth and thin-skinned compared to lemons. Marketability of Indian limes should be ascertained through trial consignments to major lemon importing countries. Limes should be packed in ventilated polythene bags containing 5 or 12 fruits, twelve such bags being packed in a cardboard carton. It is envisaged that India will be able to build up exports to the tune of 200 tonnes (Rs 0.2 million) by 1970-71 and 5,000 tonnes (Rs 5.0 million) by 1975-76.

Output of grapefruits in India is very limited at present and there is scarcely any production of established seedless varieties such as Marsh, Pink and White. The Survey indicated that the relatively small volume of current world trade is a reflection of the inelastic world supply position rather than limited demand. Against this background, it is recommended that India should take immediate measures to develop and expand production of established seedless varieties of grapefruits. As a first step, the proposed Fruits and Vegetables Export Corporation should undertake a comprehensive examination of the feasibility of growing grapefruits in India on a commercial basis for export purposes.

Citrus Products.

World Production. Juices, concentrates, segments, frozen juices, peels and pulps are the most important processed citrus products. USA, with a production of 1.6 million tonnes, represents the largest manufacturer of both fresh and frozen citrus juices. Israel is the

second largest producer of citrus juices, with an estimated annual production of 75,000 tonnes. Bulk of the world production of mandarin orange segments, reckoned at 225,000 tonnes, is accounted for by Japan; other producers, far less important, include China, Spain and Taiwan. World production of grapefruit segments amounts to about 85,000 tonnes, emanating mainly from USA and Israel. Production of processed citrus items in India is negligible. A review of the citrus processing industry in the major supplying countries, Japan, Israel, Spain, Italy and Greece, is given in the Report.

World Trade. Total exports of citrus juices in 1964 were 38.8 million gallons or about 0.2 million tonnes. Orange juice is the leading item of exports, shipments having totalled 25.7 million gallons (127,000 tonnes) in 1964, followed by grapefruit juice (35,000 tonnes) and lime juice (10,000 tonnes). USA and Israel account for well over 50% of the world exports. Total world exports of mandarin orange segments have been estimated at 75,000 tonnes during 1966, Japan accounting for 66,000 tonnes or 88%. Israel, the leading grapefruit segments exporter in the world, despatched 10,000 tonnes of this item to European markets during 1966.

UK and West Germany constitute the largest markets both for single strength and concentrated juices having together accounted for 75% of the single strength juice imports and 60% of the citrus concentrates in 1965. France is another major importer of fruit juices, imports comprising mostly single strength juices.

On the other hand, Denmark, Netherlands, Switzerland, Norway and West Germany offer sizable markets for concentrated juices in view of the rapidly growing juice re-constitution industry in these countries.

Prospects for India. The Survey has revealed that prospects exist for the export of citrus products, mainly citrus juices and mandarin orange segments. The world market for juices is mainly oriented towards concentrates, and this trend is likely to continue in the future. India's exports of citrus fruits have so far been negligible, but in view of the vast potential offered by world markets and India's capability to grow and process right varieties of citrus fruits, it should be possible for India to export 10,000 tonnes of citrus juices, comprising 5,000 tonnes of concentrates and 5,000 tonnes of single strength juices by 1975-76. Comparative prices of citrus concentrates in Europe at present are \$ 0.65 per kg f.o.b. for Spanish Valencia (65° brix), \$ 0.55 per kg c.i.f. for Israeli concentrates (65° brix) and \$ 0.50 c.i.f. for concentrates (65° brix) of Brazilian origin.

Another promising item is canned mandarin orange segments. Considering the production and processing potential of this variety in Coorg, the possibility of developing it also in Abohar (Punjab), and taking into account the anticipated expansion in processing capacity, it should be possible for India to attain export of 25,000 tonnes (Rs 46.3 million) by 1975-76. India will have to offer the product at prices competitive to Japan whose quotations ranged from \$ 4.50 to 5.50 per case (48 x 11 oz.) during 1967.

With a view to developing a viable export industry to reach the targets envisaged above, following steps need to be initiated:

- i) India's ability to enter mandarin orange segment market depends entirely on the growth of Satsuma variety on an enlarged scale in India. While Coorg area has been found suitable for the growth of this variety, other areas promising to grow this variety need to be located. It is, therefore, recommended that a comprehensive feasibility study may be undertaken with a view to ascertaining the areas having suitable characteristics necessary for the growth of this variety. Selection of ideal location of the proposed citrus processing plants should also be indicated by the study from the points of view of procurement of fruit, availability of adequate water and electricity, labour and other necessary operational aspects.
- ii) A comprehensive and integrated programme for the production of mandarin orange segments and concentrated juices needs to be evolved on the basis of the results of the above mentioned study. This programme should include the development of right varieties, granting of required assistance to the growers who may opt to cultivate these varieties, both technical and financial, and the establishment of three export oriented units especially for the manufacture of segments and juices.
- iii) A study of the mandarin orange segment industry of Japan may be undertaken with a view to evolving a programme for the development of this industry in India. A team consisting of a food technologist and an horticulturist with specialisation in citrus, needs to be deputed to Japan for undertaking this detailed study covering all the aspects right from the stage of production and procurement of fruit to marketing.

- iv) USA and Spain are the two leading citrus juice producing countries of the world. A detailed study of their industries would be useful for working out a similar programme in India. In particular, a detailed study of the 'Plan Badajoz' undertaken by the Spanish Government for the systematic development of Badajoz and Seville valleys for horticultural production, would be extremely useful.
- v) Citrus essential oils used by the pharmaceutical industry in the world are entering international trade in sizable volume. Considering their importance, Indian industry should intensify its effort in enlarging production and exports.

PINEAPPLES

Fresh Pineapples

World Production. In 1965 world production of pineapples was of the order of 3.5 million tonnes. Major producing countries include USA (Hawaii) (0.9 million tonnes), Malaysia (0.4 million tonnes), Thailand (0.3 million tonnes), Brazil (0.3 million tonnes), Philippines (0.2 million tonnes), Taiwan (0.2 million tonnes), and South Africa (0.1 million tonnes). Latest data on India relate to 1961-62, when pineapple production was placed at 76,000 tonnes.

Of the several varieties of pineapples cultivated, Smooth Cayenne, Queen, Singapore Spanish and Red Spanish are important, Smooth Cayenne being the most favoured variety for canning purposes. Kew, Queen and Mauritius are the major varieties grown in India. Of these, Kew, believed to be a hybrid of Smooth Cayenne, is considered most suitable for canning.

Average yield in India is about 10-12 tonnes per hectare as against 60-70 tonnes obtained in Hawaii. Experiments conducted in the Fruit Research Station in Mysore and Kerala have proved that through the adoption of close bed-system of planting suckers (40,000 per hectare), the yield can be increased to 25-30 tonnes per hectare.

World Trade. World trade in fresh pineapples is very limited compared to the production. Excluding shipments from Malaysia to canneries in Singapore, world exports of fresh pineapples are estimated to be well under 100,000 tonnes representing scarcely 3% of the world output. USA and Argentina are the leading importers of fresh pineapples, Mexico and Brazil being the major suppliers to these countries respectively. Demand in Japan has been rising very rapidly in recent years, imports having gone up from less than 1,000 tonnes until 1962 to 21,000 tonnes in 1966; Taiwan is the largest supplier of fresh pineapples to Japan. Among the European countries, France is the chief importer. Imports into France evinced a substantial rise from 6,000 tonnes in 1963 to 14,000 tonnes in 1967. (The industry in Mexico, Brazil, Cuba, South Africa, Azores, Guinea and Martinique, which are the principal suppliers, is briefly reviewed in the Report).

Prospects for India. Cultivation of pineapples as a commercial fruit in India is very limited at present. There are definite possibilities of stepping up the production of pineapples through extension of area and improvement in the methods of cultivation in different

parts of the country, including Kerala, Mysore, Assam, West Bengal, Tripura and Goa, which provide suitable soil and climatic conditions. Improvement in the methods of cultivation is particularly relevant from the standpoint of achieving production economies. The present cost of production of about Rs 200 per tonne of fruit must be regarded as high when compared with about Rs 110 in Ivory Coast and Rs 95 in Philippines (canner's estates). In order to improve yields and reduce costs it is essential to obtain quality planting material, follow the close bed-system of plantations and provide adequate fertilizers. It is also necessary to extend the harvesting season through application of suitable hormones, to ensure supplies round the year.

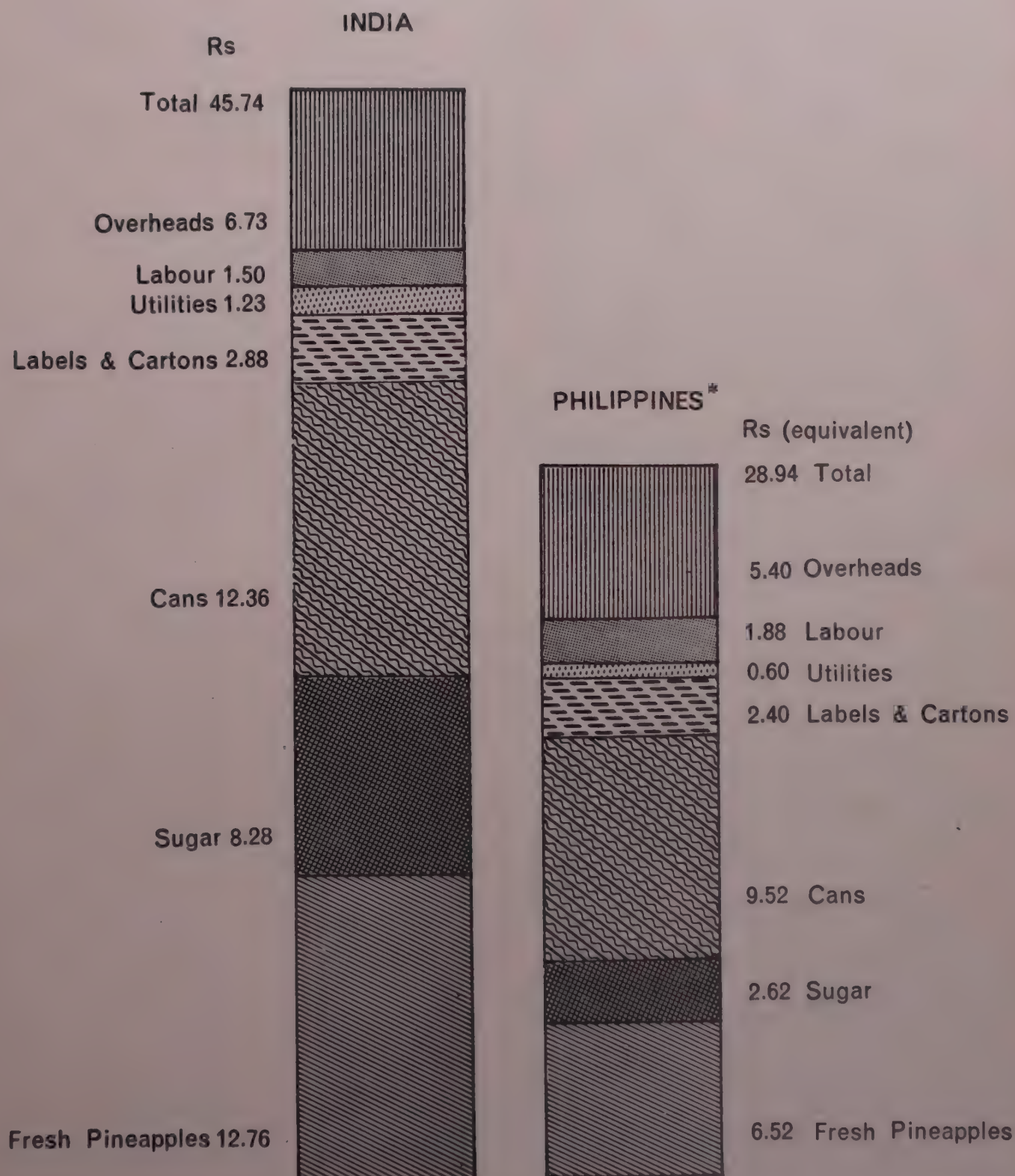
It would be desirable to encourage large scale holdings and develop production on regular plantation basis so that higher yields could be obtained through improved methods of cultivation. Alternatively, the Survey recommends the formation of growers co-operatives, which should be provided with the necessary financial assistance and technical guidance for adopting modern methods of cultivation. As for marketing, it is suggested that the task be entrusted to the proposed Fruits and Vegetables Export Corporation, with the growers co-operatives being affiliated to the Corporation on a selective basis. With an institutional approach of this type, it should be possible to develop an appreciable volume of export trade in fresh pineapples. However, in view of the strong competition from other countries with an already developed industry, modest targets of 200 tonnes and 500 tonnes are suggested for 1970-71 and 1975-76.

COMPARATIVE COSTS OF PRODUCTION

—CANNED PINEAPPLE SLICES

1967

(Unit: one case of $24 \times 2\frac{1}{2}$)



*Relates to 'Fancy' grade; Indian output is not graded.

Canned Pineapples

World Production. World output of canned pineapples (solid packs) evinced a considerable rise from 503,000 tonnes in 1960 to 700,000 tonnes in 1966. USA (Hawaii) is the largest producer of canned pineapples, accounting for 44% of the estimated output in 1966. Taiwan, Malaysia, Philippines and South Africa are the other major producing countries accounting for a further 38% of the world production. Pineapples are also processed, to a lesser extent, in Australia, Mexico, Ivory Coast, Kenya and Cuba. (Processing industry in USA, Taiwan, South Africa, Philippines and Malaysia is reviewed in detail in the Report).

World Trade. About 50% of the total output enters the world markets. USA, Taiwan, Malaysia, Philippines and South Africa account for more than 70% of world exports. West Germany, USA and UK are the leading importers; other important markets include Japan, Canada, France, Netherlands and Belgium. Representative c.i.f. prices of canned pineapples obtaining at the time of the Survey in some of the major importing countries varied within the narrow range of \$ 5-6 per standard case, thus reflecting the high degree of competition prevailing in this field. Current Indian quotations are upwards of \$ 8 per case.

Total output of pineapple products in India amounted to 3,500 tonnes in 1965 comprising 40% slices, 35% juices and 25% jams. Nearly 60% of the production is concentrated in Kerala, where the canners have entered into workable

agreements with the growers for the supply of fresh fruit. Most of the production is consumed within the country, exports being limited to about 100 tonnes of juices, mainly to USSR.

Prospects for India. The pineapple industry in India has a long way to go to catch up with the advanced industry in countries like USA and Philippines. The success of the industry in these countries can be attributed in the main to the vertical integration of operations, ranging from cultivation of the fresh crop to marketing of the finished product. Besides, the expensive modern equipment used and the constant attention paid to research have greatly contributed to economies in the cost of production. The Survey has shown, for instance, that cost of production of canned pineapple slices in India is 58% higher compared to that in Philippines.

Restrictions imposed on acquiring plantations of adequate size; high cost of raw materials like sugar and cans, lack of adequate resources for investment and limitations on imports of machinery and know-how are some of the major factors inhibiting growth of the processing industry in India. In order to develop the industry on modern lines, it is necessary to be able to produce the fruit at economic costs, raise the requisite canning varieties, ensuring that the fruit are available throughout the year, and set up modern plants of the minimum economic size. Cannerys should be encouraged to acquire adequate plantations of their own, so that the advantages can be realised of vertical integration contributing to efficiency of operations.

Further, selling canned pineapples overseas calls for aggressive publicity and promotion. Tie-up arrangements with leading distributors abroad, under whose label the product can be offered, will be very helpful in this context. It will also be advantageous to explore the possibility of entering into suitable agreements with foreign processors under which pineapple juice concentrates can be exported from India for reconstitution at the other end.

The possibilities of inviting collaboration from established overseas packers, and of inducing leading foreign financiers to invest in the development of the processing industry in India need to be explored. Technical assistance may also be sought from countries like USA and France, for establishing and developing a viable pineapple industry in India on modern lines.

Taking into account the growing world demand and the various measures suggested above, it should be possible for India to develop an export trade of 15,000 tonnes (Rs 25.5 million) in canned pineapples by 1975-76.

MANGOES

Fresh Mangoes

World Production. India is by far the largest producer of mangoes, accounting for 7.5 million tonnes of the estimated world output of 9.5 million tonnes. Other producing countries include Pakistan, Thailand, Philippines, South Africa, UAR and Cuba.

A large number of varieties, estimated at over 1,000 are reported to be grown in India, of which twelve are of commercial importance, including Alphonso, Benishan, Swarnarekha, Dussehri, Chausa and Neelam. Varieties grown in other countries are mostly known by local names, and there does not appear to be any uniform nomenclature. The harvesting season in India extends from March to September, the duration of season depending upon the variety. Harvesting seasons in Thailand and Philippines nearly coincide with those of India. In South Africa the harvesting season is from February to April, in Egypt from July to September, in Mali from February to June and in Malagasy from September to February. Mangoes are thus available round the year, in one part of the world or another.

World Trade. World trade in mangoes is very limited, total world exports being estimated at 10,000 tonnes. Philippines and Thailand are the largest exporters of mangoes, shipments amounting to 3,200 tonnes and 2,200 tonnes respectively in 1966. Philippines exports almost exclusively to Hong Kong, while Thai mangoes are directed mostly to Singapore and Malaysia. Bulk of India's exports, 1,100 tonnes in 1967, are absorbed by the Gulf states, limited quantities being shipped to UK and other European markets. Other suppliers include South Africa, Kenya and Israel, exporting mainly to European countries, particularly UK and France.

Prospects for India. Although there is a substantial production base in the country, exports of mangoes from India have been relatively insignificant. The principal reason for the extremely limited volume of international trade in mangoes has been by and large attributed to the lack of adequate knowledge about the usage among the European consumers. Indications, however, are that the potential is immense: it is estimated that demand may go up as high as 50,000 tonnes in the next decade in Europe alone. The production base in African countries like Mali, Congo and Senegal is limited and will continue to remain so despite the scope that exists for expansion of production. It follows that India can hope to secure a sizable share of this potential demand, given adequate promotional support.

The strategy for developing a stable export trade in fresh mangoes will have to differ from region to region. As far as markets in South East Asia are concerned, India, notwithstanding its disadvantage in terms of distance vis-a-vis other competitors, can hope to secure an appreciable share of the market mainly by virtue of the acknowledged superiority of Indian mangoes in respect of quality. The sizable population of Indian origin is another favourable factor. Thailand and Philippines are exporting mangoes to Singapore and Hong Kong respectively at prices ranging from \$ 130 to \$ 150 per tonne, c.i.f. A premium of 15-20% can be expected for Indian mangoes, but provision of satisfactory shipping services is an essential prerequisite.

India is the largest supplier of mangoes to the Gulf states. Even here, there appears to be scope for stepping up exports appreciably if the shipping facilities are improved. It is suggested that the Shipping Corporation of India should acquire and ply a fast moving boat of about 1,000 tonnes capacity, half of it being reserved for refrigerated cargo, with separate hauls for different kinds of fruits and vegetables. This will facilitate increased exports of mangoes and other fruits as well.

Discussions held during the Survey with the leading tropical fruit importers in European markets indicate that there are bright prospects for expansion of exports to the European countries. Shipments to the European markets will initially have to be made by air. If the fruit can be offered at about \$ 0.50 per kg c.i.f., followed by effective publicity and promotion, it should be possible to expand exports to a level of 1,000 tonnes in the immediate future. But the biggest bottleneck is the high air freight tariff, which alone amounts to nearly \$ 0.50 to most European markets. Efforts should therefore be made to secure reduction in these tariffs, and in the meantime fiscal assistance should be offered for exports. The objective should be to create 'base' markets in the initial stages for eventual expansion.

The following are some of the considerations that will have to be taken into account in regard to exports of mangoes to the European markets:

- i) Quality of the fruit is of prime consideration. A bright yellow colour is generally preferred in most European markets. The fruit should be perfectly graded by size and appearance. Four or five fruit to a kg will be generally acceptable.
- ii) Special care will have to be taken in regard to packing. The fruit should be individually wrapped in tissue paper and packed in cardboard cartons; 12 fruit to a carton will be preferred.
- iii) Mangoes being a comparatively little known fruit in the European markets, adequate publicity and promotion is called for to build up a sizable export trade. Small pamphlets explaining how to cut and serve the fruit and recipes for preparing ice cream, fruit salads, etc. with mangoes may be forwarded along with each carton shipped.
- iv) Appropriate marketing arrangements are of great significance in exports of fresh fruit to the European countries; trade in these markets is usually controlled by a handful of businessmen.
 - Suitable tie-up arrangements will therefore have to be made with leading importers, selected speciality stores, etc.
- v) Although Alphonso is the best known variety outside India, the choice can by no means be considered limited to this. There appears to be scope for Dussehri and other varieties. Efforts should be made through consumer surveys in UK, France, West Germany, Netherlands and Belgium to ascertain the consumer preference as between different varieties of mangoes available in India.

It is envisaged that through an organised effort, it will be possible to build up export trade of the order of 10,000 tonnes by 1975-76, of which the European markets should be able to absorb at least 5,000 tonnes.

Mango Products

World Production. Processed mango products include slices in syrup, juice, nectar, pulp, jam and pickles and chutneys. Of these, only mango slices in syrup and mango nectar are to some extent produced by other supplying countries, the remaining being largely confined to India. Current world output of mango products is estimated at 15,000 tonnes, India being the largest producer, accounting for over 11,000 tonnes. Production of UAR, comprising mainly mango nectar, is reckoned at 2,000 tonnes.

World Trade. India is the largest exporter of mango products, current shipments amounting to 5,000 tonnes, consisting mainly of pickles and chutneys and nectar. Exports of other suppliers are reckoned at 2,000 tonnes, including about 1,500 tonnes of mango nectar from UAR. While UK represents the largest market for India, bulk of the exports of UAR are directed to Kuwait.

Prospects for India. Exports of canned mango slices in syrup can be stepped up from the present level of 150 tonnes (Rs 0.6 million) to 500 tonnes (Rs 1.5 million) by 1970-71 and 8,000 tonnes (Rs 17 million) by 1975-76. This can be achieved, provided the industry is enabled to offer the product at competitive prices vis-a-vis popular products like peaches and pineapples, which are currently offered at \$ 4-6 per case (24x2½) c.i.f. as against the present Indian quotations ranging between \$ 8 and \$ 10 per case. The Survey has also revealed that appreciable scope exists for augmenting the exports

of canned mango slices to Singapore and Malaysia, through tie-up arrangements with leading agents in these countries.

Exports of mango nectar have evinced a substantial rise in recent years, amounting to 3,300 tonnes (Rs 7.9 million) in 1967-68; bulk of the exports are directed to USSR and Kuwait. The next largest market accounted for 960 tonnes during 1967-68. Indian mango nectar has come to be established in Kuwait where it is offered at prices 20% less than that of the Egyptian nectar. Considerable scope is envisaged for mango nectar in the South East Asian and European markets, provided adequate promotional effort is undertaken. It is considered possible to expand total exports of mango nectar to the level of 8,000 tonnes (Rs 16 million) by 1970-71 and 20,000 tonnes (Rs 40 million) by 1975-76. In augmenting exports of this item, requirements of individual markets will have to be carefully kept in view. Consumers in West European markets, for instance, prefer nectar of 20-25% strength, while the preference in Kuwait is for pure juice.

The Survey has revealed that definite scope exists for exporting sizable quantities of mango pulp to processors in other countries for re-consittution and use in the manufacture of jams. The product can be conveniently offered in hot sterilized form in 5 kg tins. Exports of this item are projected to reach a level of 500 tonnes (Rs 1 million) by 1970-71 and 5,000 tonnes (Rs 9 million) by 1975-76.

Exports of pickles and chutneys are currently of the order of 1,400 tonnes (Rs 4.2 million). Shipments to UK, which represents the largest market, are made in bulk for repacking and sale under local labels. The Survey has revealed that similar arrangements are possible with repackers in Western Europe. Processors in Iraq have evinced keen interest in entering into franchise agreements with India, under which pickles and chutneys could be manufactured in Iraq, from raw slices in brine to be obtained from India, using the Indian know-how, and marketed under the Indian label. If such an arrangement is not acceptable to India, there could hardly be any exports of this item to Iraq, which offers a large scope for re-export trade to the neighbouring Arab Countries, especially against the background of the ban on imports of retail packs of pickles and chutneys. Exports of pickles and chutneys are expected to go up to 2,000 tonnes (Rs 5.0 million) by 1970-71 and 3,000 (Rs 7.5 million) by 1975-76.

TABLE GRAPES

Fresh Grapes

World Production. World production of grape crop in 1965-66 was estimated at 53 million tonnes, of which table grapes accounted for about 6 million tonnes. The principal producers of table grapes include Italy (0.8 million tonnes), France (0.3 million tonnes), Greece (0.2 million tonnes) and Spain (0.1 million tonnes). Indian production of table grapes has been estimated at 130,000 tonnes in 1966. Grape cultivation is mainly

concentrated in Maharashtra (50,000 tonnes), Andhra Pradesh, Madras, Mysore, Punjab and Haryana.

The average yield per hectare ranges from 10 tonnes to 17 tonnes in Italy, 12 to 15 tonnes in Spain, 10 to 12 tonnes in France and 9 to 10 tonnes in Greece. Average yield in India ranges between 10 to 25 tonnes.

Popular varieties of table grapes grown in major producing countries comprise, Regina, Chassel Gros Velt, Muscat, Cardinal, Alphonso Lavelle and Rosaki. Presently, India does not grow these varieties (except for small area under Muscat). India's principal varieties include Anab-e-Shahi, Bokhari and Gulabi.

The main season of harvest of table grapes in Europe extends from July to October and gradually tapers off by December. Efforts to develop the early and late varieties for prolonging the marketing season in Europe has met with only limited success. In Spain, however, winter grapes, which account for bulk of the production, are harvested between November and February as also the grapes produced in hothouses in Belgium and Holland. In India the principal harvest is during December-May period, particularly in South India.

World Trade. World exports of table grapes in 1965 amounted to 940,000 tonnes (\$ 14.8 million). Bulgaria, Italy, Greece, Spain and France comprised the major exporters of table grapes in Europe together accounting for about 50% of the world exports. Bulk of their exports, however, is directed to countries within Europe, covering fully the market demand during the main crop season (July-November). West Germany, UK, Sweden and Switzerland are significant importing countries in Europe. Important

markets in South East Asia are Singapore, Hong Kong and Philippines. UK and West Germany however represent the principal off-season importers in Europe.

Prospects for India. Grape harvests in major producing countries are strictly seasonal with supplies, in the main confining to July-October. India, on the other hand, harvests mainly during December-May with the possibility of securing supplies in other months of the year. Such a complementarity in the seasons of production provides a good opportunity for India to develop exports of table grapes to European markets during their off-season. Survey has shown that there is a sizable off-season market for table grapes in Europe during December-May to the extent of 50,000 tonnes. South Africa at present holds a major share of the market exporting Alphonso Lavelle, Muscat, Rosaki and Regina varieties at about \$ 0.25 per kg. c.i.f. London by sea.

Varieties which are currently grown in India include Anab-e-Shahi and Gulabi. Efforts should be made in the medium and long term to produce the varieties preferred in the European markets. However, the short term potential for table grapes currently grown in India should be investigated in European and Singapore markets. It is estimated that exports of grapes which are currently of the order of 3 tonnes (Rs 8,000) can be stepped up to 50 tonnes (Rs 0.20 million) and 1,500 tonnes (Rs 6 million) in 1970-71 and 1975-76 respectively.

Processed Grapes

Canned grapes and wine are the two significant items among processed grapes, besides grape juice. Out of a total average world grape production of 53 million tonnes, 90% is utilised for the manufacture of wines. Commercial production of wines has started in India only recently. In view of the importance of the industry in international trade, it is considered essential to make a systematic assessment of the possibilities of developing an export oriented wine industry in the country.

Having regard to India's ability to produce Thompson seedless variety and the profitable trade that exists for this item in the world markets, it has been envisaged that India should be in a position to export approximately 1,000 tonnes of canned grapes by 1975-76. In order to realise the target, it would be essential to implement the following measures.

1. A few trial consignments of choicest Indian varieties including Anab-e-Shahi and Gulabi may be sent to UK and West Germany for ascertaining the trade as well as consumer reaction to their suitability.
2. While the Indian Agricultural Research Institute, New Delhi is reported to be seized of the problem of selection and introduction of European varieties in the country, it needs to be ensured that the varieties selected conform to those marketed presently in Europe and could be harvested in India during December-May period.
3. Among the countries surveyed in South East Asia and West Asia, Singapore offers immediate export prospects for Indian grapes. The annual average imports of Singapore are around 2,200 tonnes, coming mainly from Spain and USA. Trade

discussions held during the Survey indicated that Singapore importers would be willing to secure supplies from India provided the prices are competitive. It is believed that demand can be created for varieties like Anab-e-Shahi and Gulabi in the Singapore market. The acceptable c.i.f. price is likely to be about \$ 0.50 per kg. Pending the establishment of the proposed Fruits and Vegetables Export Corporation, the initial trial shipments to Singapore may be made by the State Trading Corporation of India for market exploration.

4. An integrated programme for the development of a canned grapes and wine industry in India should be formulated on the basis of a feasibility study to be undertaken for the following:
 - i) identification and selection of varieties suitable for canning and wine-making purposes;
 - ii) selection of areas most suitable for the growth of these varieties;
 - iii) determination of the number of processing units to be set up in ideal locations;
 - iv) arrangements for the procurement of quality grapes for processing.
5. In view of the potential that exists in Europe, it is suggested that a detailed consumer survey should be undertaken in selected countries for studying the market characteristics and potential for wines and canned grapes.

LYCHEES

Fresh Lychees

China and India are the two principal producers of lychees in the world. On a smaller scale, they are also cultivated in South Africa and Malagasy. While the production season in South Africa extends over December-

January, in Malagasy it runs from November to February. Production of lychees in India has been estimated at 140,000 tonnes, with Bihar State accounting for over 80% of the total. The early varieties of lychees come to harvest during April-May and the late varieties during May-June.

The Survey has shown that fresh lychees hold out promise of becoming one of the important tropical products with attractive market prospects in European countries. The present limited imports of lychees (approximately 200 tonnes) into countries of Western Europe should, according to trade circles, be taken to reflect more the paucity of supplies of quality lychees rather than the absence of good demand for this item, Indian lychees, as revealed by the Survey are superior to those offered by South Africa, Malagasy and other countries. Prices quoted for lychees (\$ 1.00 per kg c.i.f.) are obviously attractive.

Processed Lychees

Market for canned lychee wholes, though limited at present, is reported to be growing rapidly in the European markets. UK imports on the average about 100 tonnes per annum. China and Hong Kong are the major suppliers of this item. Their c.i.f. prices in UK, during the time of the Survey, were between \$ 12-15 a case of 24x2 $\frac{1}{2}$. Canning of lychees in India has not developed to any significant extent.

Prospects for India. India is favourably placed in the matter of development of exports of lychees and lychee wholes to European markets provided the necessary infrastructure in the matter of handling, packing and transportation is developed. Given the requisite facilities, it should be possible for India to increase the export of lychees to the extent of 500 tonnes (Rs 1.8 million) by 1970-71 and 1,500 tonnes (Rs 7 million) by 1975-76.

Following steps are recommended for implementation:

1. Lychees have a tendency to lose their outer colour after being harvested from the tree, reducing their marketability to a considerable extent. Experiments conducted in Malagasy have shown that if lychees are cooled immediately after harvest through a process called 'Hydro Cooling', it is possible to arrest the discolouration process. There is need to acquire the technical know-how in this respect.
2. In order to ensure that lychees are of optimum maturity and colour, it is necessary to harvest them at the right stage. This aspect needs scientific investigation.
3. Due to the high perishable nature of the lychees, there is need to keep them in refrigerated condition not only after their harvest but also during transit from the production points to the importing markets. Malagasy's experience has shown that lychees can be kept well for about 22 days, when stored at 2°C; this aspect needs to be investigated in relation to Indian lychees.
4. Information gathered during the Survey revealed that lychees are packed in polythene bags, each containing about 500 gms and 10 such bags placed in a

cardboard carton. The use of polythelene bags is reported to be essential for preventing dehydration of the fruit and enhancing chances of their keeping quality. The Indian Institute of Packaging should evolve suitable packing for Indian lychees.

5. Packing, grading, and cold storage facilities have to be created at convenient points in the producing areas.
6. In the initial stages, lychees should be transported by air to the European markets. Considering the fact that Air India has regular flights to London with stop-overs at Geneva, Frankfurt, Rome, Paris and Brussels, it would be advantageous to establish suitable arrangements for airlifting lychees to these markets.
7. It is considered necessary that a modern processing plant should be set up, preferably in Bihar where adequate production base for high quality lychees exists.

DECIDUOUS FRUITS

Deciduous group of fruits comprise mainly apples, peaches, pears, apricots, strawberries and plums. A large international trade has been built up for these items, in the fresh as well as processed forms, in view of the traditional preference of the consumers in Western countries for temperate over tropical fruits. Production and processing of deciduous fruits in India, as compared to the growth achieved by major producing countries, is still fractional.

1) APPLES

Fresh Apples

World Production. World output of apples was of the order of 19 million tonnes in 1965 consisting of 16.7 million tonnes of table varieties and 2.3 million tonnes of cider apples. Europe accounts for over 50% of the world output. Italy (2.5 million tonnes), West Germany (1.5 million tonnes) and France (1.2 million tonnes) are the major producing countries in the region. USA (3.5 million tonnes), Australia (0.3 million tonnes), Japan (1.1 million tonnes), Lebanon, Argentina and South Africa are the other major producers. Production of apples in India is about 49,000 tonnes per annum.

Delicious group of variety (Red, Golden and Starking), Jonathan, Boskeep and Cox Orange Pipin constitute the most important varieties. India produces Delicious varieties (Red and Golden) particularly in Himachal Pradesh and Jammu & Kashmir.

World Trade. World exports of apples amounted to 1.9 million tonnes (\$ 293 million) or about 6% of the world output in 1965. Italy, France, USA, Australia, Argentina, South Africa, Hungary, Canada, Netherlands and Lebanon together account for over 60% of the world exports.

Notwithstanding its sizable local production, Western Europe imports large quantities of apples. Imports by this region totalled 1.5 million tonnes valued at \$ 204 million in 1965. Nearly 50% of the West European requirements are met by intra-European trade. The balance accrues from USA, Argentina and Australia. Other major importers of apples comprise Malaysia, Hong Kong, Iraq, Philippines, Syria and

Jordan.

Prospects for India. India's prospects for exports of apples are not bright in the short run owing to the small volume of output. Unless the production base for apples is expanded on a planned basis, it would be difficult to envisage India exporting apples even in the long run. The most suitable areas for planned cultivation of apples are considered to be Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh and Madras.

The long term prospects however have to be viewed in relation to the recent developments taking place in major producing countries. During the Survey it was learnt that leading producers like France and Italy are now resorting to storing of apples under controlled atmospheric conditions which enables them to prolong the marketing season throughout the year. This development is expected to affect even the prospects of the traditional off-season (April-June) supplying countries such as Argentina, South Africa and Australia.

Market opportunities in West Asia are also limited as this region is well served by Lebanon whose output of apples is expected to rise considerably in the next few years. The prospects of exporting apples to South-East Asian countries also appear limited.

Processed Apples

Apart from cider, important processed apple products include canned apples, apple sauce, apple juice and jams & jellies. USA (400,000 tonnes), France (43,000 tonnes)

and West Germany (39,000 tonnes) are the largest processors of apple products. India produces about 400 tonnes of apple juice per annum, mainly for domestic consumption.

Apple juice appears to be the major item which enters international trade. UK (10,700 tonnes) and West Germany (8,000 tonnes) in Europe, Kuwait in West Asia and Singapore in South East Asia annually import considerable quantities of apple juice.

ii) PEACHES

Fresh Peaches

World Production and Trade. World production of peaches was of the order of 5.2 million tonnes in 1965. USA, Italy and France accounted for 68% of the world output. It is reported that considerable expansion in production will take place in the major producing countries, particularly in Europe, by 1970.

A number of varieties are being grown in Europe, although the tendency is towards encouraging cultivation of selected varieties which are not only suited to local conditions but also help in extending the period of harvests. Main table varieties under cultivation in Italy include J.H. Hale, Cardinal, Dixired, Vesuvius and varieties of Morettine. Vivian and Everts are the choicest canning varieties.

Average yields reportedly vary according to the varieties cultivated, soils and climatic conditions. However, an yield of 20-30 tonnes per hectare is considered normal.

Processed Peaches

From the international trade point of view canned peaches are highly significant. Other processed items like dried peaches, jams and jellies are reported to account for less than 5% of the total. Major producers of canned peaches in 1966 were USA(738,358 tonnes), South Africa (94,778 tonnes), Japan (66,361 tonnes) and Italy (31,987 tonnes).

Of the estimated 4 million tonnes of world trade in canned fruits, 25% represent canned peaches. USA is the leading world exporter with about 10% of the world trade. UK, West Germany, Canada and Netherlands are the principal importing countries, in that order.

Cultivation of peaches in India is confined to temperate and sub-tropical regions of Uttar Pradesh, Himachal Pradesh, Punjab, Jammu & Kashmir and Madras (Nilgiris). The total production in 1961-62 was estimated at 7,360 tonnes from an area of 1,263 hectares. Output of processed items during 1966 was around 100 tonnes, comprising 45 tonnes of jams and 55 tonnes of canned peaches.

Prospects for India. Peaches, both fresh and canned, are large volume items in the international trade. If India is able to secure even a small share in the world peach market, the resultant export earnings could be substantial. From the long range point of view therefore it would be worth-while developing a sound peach industry in India.

A comparative study of the production and trade pattern of peaches in USA, France, Italy, Spain and Greece clearly brings out the disparity and disadvantages affecting the Indian peach industry. Some of the main considerations which favour the development of peach industry are given below:

- i. Certain areas in Punjab, Himachal Pradesh, Kashmir, Kodaikanal and Ooty may be suitable for commercial cultivation of this crop, especially Clingstone varieties suitable for canning purposes;
- ii. The cultivation of peaches could be more profitable in terms of per hectare return and may thereby contribute to better land resource utilisation and economic development of the concerned regions;
- iii. For quality canned peaches, it is possible to find ready markets in foreign countries, particularly in Europe;
- iv. The major producing countries of peaches in Europe like Italy and Greece have reportedly some limitations in growing good canning varieties. Efforts are being made to overcome these problems. Further investigations may be necessary to determine the intensity of these limitations and help assessing India's prospects in this field with more precision.

If India desires to have a stake in the world markets for canned peaches, peach production in India has to be organised on parity with those of the major supplying countries. A detailed plan of developmental programme should be formulated on the basis of a thorough examination of horticultural, economic and marketing aspects and their implications. For conducting the study

of the nature envisaged above, India could seek the assistance of Food and Agricultural Organisation under the Extended Programme of Technical Assistance of United Nations or explore possibilities of securing services of specialists from major producers like USA, Italy or France.

It should be possible to export about 10,000 tonnes of canned peaches from India by 1975-76, if the industry is developed on a planned basis.

iii) PEARS

Fresh Pears

World Production and Trade. World output of pears was of the order of 6.4 million tonnes in 1966. Bulk of world's production occurs in Europe and North America. Italy (1 million tonnes), USA (671,000 tonnes), West Germany (351,000 tonnes) and France (296,000 tonnes) comprise the major producers. Others include Japan, Australia, Brazil and Turkey. Annual average output in India is estimated at 32,690 tonnes. The popular varieties of pears produced all over the world are Lawson, Williams, Beurre Hardy, Clapp's Favourite, Doyenne du Commice and Duchesse.

During 1965 world exports of fresh pears amounted to 405,800 tonnes. Italy, Australia, USA, France, South Africa and Netherlands were among the main exporting countries and West Germany, UK, Sweden and Norway, the principal importers. Malaysia imports its pear requirements from Australia and China (Mainland).

Processed Pears

Processed pears mainly consist of canned pears and pear juice. USA (220,000 tonnes), Australia (69,000 tonnes) and South Africa (30,000 tonnes) are the major producers of canned pears. Principal importers are UK, Canada, Sweden and Netherlands.

Prospects for India. With an average annual production of 425 tonnes, India cannot hope to export fresh or processed pears at present. Long range prospects therefore depend upon substantial increase in production of fresh pears and expansion in canning capacity. The basic step would therefore be to strengthen the production base in India for obtaining a sizable output.

iv) STRAWBERRIES

Production and World Trade. Production in Survey countries of Europe during 1966 has been estimated at 263,423 tonnes. Output includes openfield and hot house harvest. Other major producers of strawberries are USA, Israel, Kenya, Malta, South Africa and Cyprus. Strawberries in India are cultivated mainly in the hilly regions, their output being very small.

The varieties preferred in European markets are Souvenir de Charles Machirouse, Madame Mutot, Regina, Torrey, Tioga and Salona. Israel in recent years has been trying to popularise Early Dawn and Larsen varieties in the European markets. Countries in Europe harvest strawberries during April-June and in Israel, South Africa and USA the berries are ripe for harvest during January-March, coinciding with European off-seasons. These countries

air-freight strawberries during January-March to Europe and secure off-seasonal prices ranging from \$ 1.0 to \$ 2.0 per kg as against the seasonal price of 50 cents. In India, strawberries are harvested during May and June in hills and February to April in the plains.

Prospects for India. The Survey suggests that India's interests lie mainly in exploring the market opportunities during the off-season period, that is prior to April, when small strawberry output is available from the plains. Sizable exports can be realised therefore only when cultivation is extended to plains substantially. If concerted efforts are made on the production and export of strawberries, it is estimated that India can achieve an export of 75 tonnes by 1970-71 and 1,000 tonnes by 1975-76. OECD specifications for quality and packaging will need to be adopted for exports to the European markets.

Processed Strawberries.

Canned or bottled strawberries and strawberry jams are the most important processed items that enter international trade. USA, Netherlands, Poland and Bulgaria are the main processors of this item while the principal importers comprise West Germany, UK, Sweden and Belgium-Luxemburg. Only strawberry jams are currently produced in India mainly for domestic consumption.

v) APRICOTS

Fresh Apricots

World Production and Trade. Of the estimated one million tonnes of world apricot output, nearly 50% is accounted for by three leading producers namely USA, Spain and France. Principal apricot varieties include Bulido, Monique, Nancy Peach and Pearlas. The fruit is harvested between May and August in Europe and from December to February in Australia and South Africa. During 1961-62, India's production of apricots amounted to 8,400 tonnes.

Apricot exports from the Survey countries during 1964-66 averaged 26,390 tonnes per annum. West Germany, Switzerland, France and UK constitute the major importing countries. Australia and South Africa were the main non-European suppliers.

Processed Apricots

Canned, dried and pulped apricots are the important processed items which figure in the international trade. World output of these products has been estimated at 400,000 tonnes, USA, Spain, South Africa and Australia being the leading manufacturers. During 1966, India's production of processed apricots was of the order of 200 tonnes. World trade in these items is estimated at 150,000 tonnes, major importers being UK and West Germany. Export prospects for Indian apricot products largely depend upon extensive cultivation of this fruit in the country.

Prospects for India. A development programme on the lines suggested for peaches requires to be evolved in respect of apricots as well for initiating exports in this field.

vi) PLUMS

Fresh Plums

World Production and Trade. World output of fresh plums was of the order of 3.7 million tonnes during 1965. Yugoslavia, Romania, USA and West Germany are the principal producing countries. Production of plums was estimated at 11,240 tonnes during 1961-62, which are consumed mostly in the fresh form. Wickson, Kesey, Santa, Rose, Czars, Pozegasa and Prume d' Agen are the principal preferred varieties. During 1967, 447,000 tonnes of fresh plums entered the world trade which was mostly in the form of intra-European trade. West Germany and UK were the biggest importers.

Processed Items

Plums are mainly utilised for the production of prunes (dried plums) and spirits. Yugoslavia is the world's leading manufacturer of plum brandy.

Prospects for India. Considering that Europe is almost self-sufficient in plum production, and that production of this fruit in India is yet to reach any sizable proportions, prospects for exporting this item, in the fresh or processed forms, appear to be limited.

Recommendations

Survey revealed that the deciduous fruit industry in India is yet to develop on modern lines for effecting exports on any sizable scale. Following measures are suggested for its development and exports.

- 1) A comprehensive feasibility study should be undertaken in the country to analyse the soil and climatic conditions of all prospective regions in relation to individual varieties of deciduous fruits that need to be grown, to investigate the economies of cultivation in selected areas, to establish the feasibility of parallel development of processing industries,

and to identify the infrastructure to be created and the inputs to be ploughed in. The feasibility study should consider medium and long term requirements as well.

- ii) On the basis of the findings of the feasibility study, a blue-print should be drawn up for the development of deciduous fruits industry in India. It would be necessary, in this regard, to take notice of the levels of development achieved by the industries of major deciduous fruits growing countries. An intensive study of the organisational structure, productive efficiency and marketing apparatus of the industry in Spain, Italy and USA is particularly recommended. This effort would enable India to plan the development of this industry with maximum scope for built-in viability and competitiveness.
- iii) It is suggested that India should seek the assistance of the Food and Agriculture Organisation for securing services of a group of specialists including a horticulturist, soil scientist, entomologist, fruit technologist and fruit engineering with a view to conducting feasibility studies in India for the development of peach and other deciduous fruit industry. Alternatively, services of horticultural technologists could be sought from major producing countries like USA, Italy and France.

OTHER FRUITS

i) AVOCADOS

USA is the largest producer of Avocados with an average annual production of 60,000 tonnes. Israel (3,400 tonnes) and South Africa (7,500 tonnes) are the other important producers. Fuerte, Hass and Ryan are

the preferred varieties. Seasons of harvest extend from April to October in South Africa and May to October in Israel.

Avocados, unknown until five years ago in the European markets, were imported to the extent of about 2,000 tonnes in 1966. Israel and South Africa dominate the European markets as the major suppliers. UK, France and West Germany are the three main importers in Europe. Although consumption of avocados is at present modest, it is envisaged that the market will evince considerable expansion (amounting to 10,000 tonnes) during the next few years.

Keeping in view the import potential of the European markets and the possibility of cultivating avocados on a commercial scale in India, it is suggested that a comprehensive avocado development programme should be chalked out and implemented. Necessary technical assistance may be sought under a suitable FAO aid Programme.

11.) MELONS

World output of melons was of the order of 2.6 million tonnes in 1966, Italy (890,000 tonnes), USA (875,000 tonnes), Spain (800,000 tonnes) and Hungary (150,000 tonnes) were the major producing countries.

Melons are of two types - water melons and musk melons. Though both of them figure in the international trade, musk melons are considered to be superior in

quality and taste and fetch double the price of water melons. Honey Dew, Ogen and Charantais are the important musk melon varieties popular in the consuming markets.

Among the European countries, UK (40,000 tonnes), West Germany (10,000 tonnes), France (12,000 tonnes) and Switzerland (5,000 tonnes) are the major importing countries. Spain, Italy, Chile and Hungary are the principal suppliers to these markets. South Africa and Australia comprise the other supplying countries of importance.

Importers contacted in West Germany and Switzerland indicated their interest in securing water melons from India, particularly during April-June when there is a general shortage of supplies from other sources. Acceptable prices indicated by them are \$ 0.60 and 0.70 per kg c.i.f. Each fruit is required to be individually wrapped with tissue paper and protected with wood-wool while packing them in the cartons. The consignments should be air-lifted.

Water melon crops are extensively cultivated in India. (Production statistics are not available). It is reported that smaller sweet melons, like French Charentais which are preferred in the European markets, can grow well in India in hot-dry areas. Taking into account that there is a steady market for melons in most of the European countries during March-May, it would be profitable to explore the possibilities of building-up a sizable trade in this item, amounting to 2,000 tonnes by 1975-76.

111) PAPAYA

Papaya, though commonly consumed in the fresh form, it is increasingly being utilised in recent years for processed items like papain and pectin. Significant producers of this fruit include USA, Spain, South Africa, Kenya and Ceylon. During 1966, output in India was estimated at 170,000 tonnes.

Belgium and Switzerland are the principal importers of papaya in Europe, the present market size having been estimated at 400 to 500 tonnes each. USA, Spain and South Africa are the chief exporters. Washington and Honey Dew are the popular varieties in demand in these markets because of the handy size of the fruits (half kilo to one kilo in weight) and succulent orange-yellow flesh. The c.i.f. price quoted for fresh papayas in the European markets ranged from \$0.50 to 0.70 per kg during February 1968.

India has not exported papayas so far. But in view of the large production base available and the fact that internationally popular varieties like Honey Dew and Washington are already being grown in the country, it is considered feasible to export about 100 tonnes by 1975-76, given an appropriate marketing orientation and strategy.

Processed items

Papain and pectin, the most important processed papaya products, are mainly utilised in food, brewing and pharmaceutical industries. Ceylon, East Africa and Congo are the main producers of these items. The present output in India is negligible. On the average

\$ 1.5 million worth of papain and pectin are annually exported from Ceylon, East Africa and Congo. Principal importers of this item are the European countries.

In view of the potential available for the exports of papain and pectin, it is suggested that immediate steps should be taken to develop a papaya processing industry in the country. Simultaneously, market surveys should be undertaken in Western Europe, especially in France, West Germany and Switzerland with a view to determining the extent of demand by end-users for these items, and prospects for Indian exports.

iv) GUAVA

Colombia, Costa Rica, West Indies, India and French West Africa are the important guava producing countries. In 1961-62, production in India was estimated at 660,000 tonnes. Guava, like many other tropical fruits, is unfamiliar to Western consumers. Discussions held during the Survey with the trade indicated that there are no immediate prospects of exporting fresh guavas to the Western countries, though canned guava products hold out some promise in UK. West Asian and South East Asian countries have also not evinced interest in this item.

v) CHICKOOS (SAPOTA)

During 1966, production of chickoos (sapota) in India was estimated at 80,000 tonnes. Its cultivation has been developed on a commercial scale in Maharashtra, Gujarat, Andhra Pradesh, Madras and Mysore. Considering that the range of fruits available in European markets during winter months is limited and the affluent sections of the population are not averse to trying exotic fruits, it would be worthwhile to introduce chickoos as a typical speciality item in West Europe. This view was expressed by some of the leading importers contacted during the Survey in West Germany and UK. In fact, some traders evinced interest to receive a few trial consignments to test the marketability of this item. It has been suggested that chickoos should be packed in cartons of 2.5 kg in single layers, each fruit wrapped in tissue paper and placed in a pouch. Depending upon the reaction on trial consignments, commercial prospects of this item can be determined. Contingent upon the consumer acceptance of this item, it is envisaged that it would be possible to export about 50 tonnes of chickoos by 1970-71 and 300 tonnes by 1975-76.

ONIONS

Dried Onions

World Production. World production of onions was estimated at 9.6 million tonnes during 1965. USA and India with a production of 1.2 million tonnes each are the leading producers of the world, followed by Spain

(0.9 million tonnes), Japan (0.8 million tonnes) and UAR (0.7 million tonnes).

Average yield per hectare was estimated at 32 tonnes in USA, 28 tonnes in Netherlands, 24 tonnes in Spain and 25 tonnes in Japan. Average yield of onions in India however works out to 9.4 tonnes per hectare, though Maharashtra and Gujarat have obtained yields upto 14 tonnes.

February-May represents the off-season for most European countries, with the notable exception of Spain which produces onions almost round the year. India grows onions throughout the year.

World Trade. In the international trade of onions UAR, Netherlands, Spain and India figure prominently. Among the importing countries UK (217,982 tonnes), West Germany (184,464 tonnes), France (61,703 tonnes), Ceylon (64,659 tonnes) and Malaysia (38,703 tonnes) were the most important during 1966.

Bulk of the onions produced in India is utilised for domestic consumption and seed purposes, and only a small volume enters the export markets. During 1967-68, 98,896 tonnes were exported, Singapore, Malaysia and Ceylon being the important importers.

Prospects for India. During January-March, imports of onions into France, West Germany and Switzerland are completely liberalised in view of their local off-season. India can become a regular supplier of onions to European markets during these months provided it can produce the

required quantity of onions. European countries prefer the mild flavoured medium bulbs often known as the Spanish onions, whose peel has pale-golden-straw colour and flesh, absolutely white. Onions are packed in 25 kg plastic or string bags for the convenience of retail marketing.

There is a distinct preference for the purple onion of the Nasik variety in Malaysia and Singapore. Indian onions command a premium not only by virtue of their colour but also because of their taste, especially the pungency. Information collected during the Survey suggests that China (mainland) could be a possible threat in these markets as she is reported to have already developed the purple coloured Nasik variety. It is, however, known to be less pungent. Average c.i.f. prices of Indian onions in South East Asian markets were around \$ 61 per tonne in 1967-68.

Considering that India can produce and export the medium size white onions required by European markets in the immediate future and that the offtake of Malaysia and Singapore markets can be expected to increase, it should be possible to step up exports from 103,362 tonnes (Rs 41.8 million) in 1967-68 to about 125,000 tonnes (Rs 51 million) by 1970-71 and 150,000 tonnes (Rs 61 million) by 1975-76.

Dehydrated Onions

UAR, which exports over 5,000 tonnes, is believed to be the largest supplier of dehydrated onions to world markets. Bulgaria, Hungary and Romania are among the

other suppliers. F.o.b. prices of UAR dehydrated onions were reported to range between \$ 456 and \$ 661 per tonnes during March.

In India, there are about two factories producing dehydrated onions, their output during the last five years being limited to about 50 tonnes per annum mainly for defence consumption. Efforts of these units to enter export markets have not proved fruitful because of high cost of production, lack of standardisation and non-availability of the requisite variety of onions. The first pre-requisite for India to enter the dehydration field will therefore be to develop production of the appropriate white variety of onions in the country. Maharashtra and Haryana are reported to be suitable for cultivation of this variety.

Provided measures outlined above are implemented, it should be possible for India to export about 2,000 tonnes of dehydrated onions by 1975-76. The following specific measures are recommended for developing production and exports of onions, dehydrated as well as fresh:

- (a) A technical study should be undertaken in Netherlands and Spain, from the point of view of fresh onions, and UAR and Bulgaria, on dehydrated onions, with a view to ascertaining the lines on which the onion industry in India needs to be developed.
- (b) Feasibility studies should be conducted in India to select suitable varieties of onions, for the fresh market and for dehydration, and identify suitable areas for intensive cultivation.

POTATOES

World Production. European countries accounted for more than 45% of the total world output of 284.2 million tonnes of potatoes during 1965. Major producing countries in this region include USSR (87.9 million tonnes), Poland (43.2 million tonnes), West Germany (18.0 million tonnes), France (11.2 million tonnes) and UK (7.5 million tonnes). Japan, India, North & South Korea and Pakistan are the most important potato producing countries in the Asian continent. During 1967 potato production in India was around 3.5 million tonnes.

Average yields ranged between 25 tonnes in Netherlands, 23 tonnes in West Germany, 19 tonnes each in France and Japan, 12 tonnes in Lebanon and about 7 tonnes in India.

There are a large number of commercial varieties of potatoes, both yellow and white fleshed, cultivated in different parts of the world. In recent years, there has been a growing consumer preference for the yellow-fleshed varieties like Bintje, Gaumaise, Electra and Record. Consumers in UK, however, prefer only white-fleshed varieties like Arran, Up-to-date and Royal Kidney.

World Trade. Of the 3.1 million tonnes of trade in potatoes, seed potatoes accounted for about 18% and the rest table potatoes. Europe dominates the world trade with 83% share equivalent to 2.9 million tonnes, mostly in the form of intra-European trade. Imports from outside European sources amounted to a small quantity of 150,000 tonnes. However, in recent years, there has

been a shift in the import pattern of the European countries with the discovery of New Potatoes. Israel, Morocco and Spain have been increasingly exporting this 'new found delicacy' to European markets and during 1966 imports of this variety were of the order of 601,341 tonnes. Indications are that demand for this item will expand at a faster rate.

Hong Kong, Singapore and Malaysia in South-East Asia and Iraq and Kuwait in West Asia depend mainly on imports for meeting their potato requirements. Taiwan, Australia and Netherlands are among the major suppliers to the South East Asian markets while exports from UAR and Lebanon are directed towards the West Asian markets. Table potato exports from India amounted to 2,040 tonnes during 1967-68, mainly directed towards Nepal.

Processed Potatoes

Processed potato items like crisps, canned peeled potatoes and dehydrated potatoes hardly figure in the international trade in view of the fact that domestic production generally equals the demand.

Prospects for India. Survey findings reveal that Singapore and Malaysia could be developed as potential markets for Indian potatoes. These markets prefer 'Bintje Claysol' potatoes because of their yellowish colour of the flesh and fewer number of eyes. Potatoes

are required to be oval in shape and big in size as they are mostly used for making chips. Average C.I.F. price quoted by Holland during 1967-68 was reported to be \$ 2 per gunny bag of 25 kg. If India can tap these markets, it would be possible to build up a market of about 2,000 tonnes by 1970-71 and 5,000 tonnes by 1975-76.

Considering that India will have disease-free potato seed stock for exports in the next few years, it may be worthwhile exploring foreign markets for this item. Export opportunities appear to be promising in view of the fact that major producers particularly European countries, look for seed potatoes around January for sowing in March-April and that India can meet this requirement.

TOMATOES

Fresh Tomatoes

World Production. World production of tomatoes has been rising since the War and during 1965 it reached a level of 19.4 million tonnes. USA (4.9 million tonnes), Italy (3.2 million tonnes), Spain (1.3 million tonnes), UAR (1.2 million tonnes), Bulgaria (0.7 million tonnes), Greece (0.5 million tonnes) and Netherlands (0.3 million tonnes - hot house produce) were the leading producing countries. India with an estimated area of 41,000 hectares and a production of 464,000 tonnes figures as one of the major producing countries accounting for about 4.5% of total world hectarage and about 2% of the total world output (1961-62).

Average yield in USA and France ranges from 30-35 tonnes per hectare, in Italy and Spain 20-25 tonnes and Greece about 19 tonnes, compared with the average of 11 tonnes obtained in India.

Important varieties cultivated in Europe include Marmande, Plate du Chateaurenard and Saint Pierre for table purposes and Roma and San Marzano for processing. In India, several local varieties are grown which differ widely in respect of their growing seasons, yields, resistance to pests & diseases and quality of the fruits.

World Trade. Based on the export figures of major producing countries, the world exports can be placed at one million tonnes which is equivalent to about 5% of the world output. Italy, Spain, Netherlands, East European countries (Bulgaria, Romania and Hungary) and Morocco, are the major exporters.

In Europe, West Germany (230,000 tonnes), France (175,000 tonnes), UK (165,000 tonnes) and Scandinavian countries (29,000 tonnes) constitute important import markets. West Germany imports two-thirds of its requirements from Netherlands, and about 15% each from Italy and Spain. Imports into UK come mainly from Spain and Portugal, while French imports originate from Morocco, Spain and Spanish Morocco.

January represents the off-season in Europe when supplies from Morocco, Canary Islands and hot-house tomatoes from Netherlands enter these markets and fetch

higher prices. For instance, as against \$ 100 per tonne (c.i.f.) paid for Italian tomatoes during the season, tomatoes from Netherlands and Canary Islands fetched a price between \$ 240-300 per tonne in the West German market in 1967-68 off-season period. Average import unit values (off-season) ranged between \$ 21-35 per quintal in 1967-68 in France, UK and West Germany.

Tomato requirements of West Asian countries are fully supplied by UAR, Lebanon and Iraq, and South East Asian countries by China (Mainland), Taiwan and Thailand. Market opportunities for fresh tomatoes exports from India therefore are limited.

Processed Items

Processed tomato products include tomato concentrates, peeled tomatoes and tomato juice. During 1966, production of these items in major producing countries like USA, Italy, Spain, France and Portugal was estimated at 2.1 million tonnes comprising 894,000 tonnes of concentrates, 542,000 tonnes of juice and 671,000 tonnes of whole peeled tomatoes.

Imports of tomato products into Survey countries amounted to 237,564 tonnes during 1965, with tomato concentrates accounting for 49%, peeled tomatoes 40% and tomato juice 11%. Main markets for these items were UK, West Germany, Switzerland and Belgium-Luxemburg. Principal suppliers were Italy, Portugal, Spain, France and USA.

Prospects for India. Entire tomato production in India is consumed in fresh form except for about 3,000 tonnes utilised by the canning industry for the production of juice, sauce, catsup (ketch-up) etc. There is no production of tomato concentrates, at present, in the country. Only about two tonnes of fresh tomatoes were exported during 1967-68.

While market opportunities for fresh tomatoes are limited, demand potential available in the world markets for quality tomato products is substantial and it is in this field that India has tremendous scope provided Indian tomato industry is given positive export orientation and is rendered comparable to leading exporting countries. Survey revealed that exports of tomato products could reach the level of 15,000 tonnes by 1975-76, provided the industry is induced to develop on modern lines. Following measures are suggested for developing a viable tomato industry in India:

1. A technical study of the American and Italian tomato processing industries should be urgently undertaken to draw lessons for determining the lines on which the Indian industry should develop;
2. A feasibility study should be subsequently made covering various aspects including selection of suitable varieties, identification of areas of development, arrangements for supply of fresh tomatoes to the processing units by developing farms on corporate/cooperative basis, and determining the number, areas and location of new processing units in suitable centres;

3. Based on the above studies, a comparative and integrated development programme should be formulated.

OTHER VEGETABLES

Between 1964 and 1966 imports of fresh vegetables (excluding potatoes, onions and tomatoes) into European countries rose from 3.8 million tonnes to 4.5 million tonnes. East and West European countries (Bulgaria, Hungary, Italy, Greece and Spain), North African & West Asian countries (Morocco, Uganda, Kenya, UAR and Lebanon) and countries of the Far East (Taiwan and Japan) were the major suppliers of fresh and processed fruits and vegetables to the world markets. India, on the other hand, with an average annual production of 1.2 million tonnes of vegetables exported a meagre volume of 2,189 tonnes during 1967-68.

The Survey has revealed, however, that excellent market opportunities are available in Europe, West Asia and South East Asia for the exports of cauliflowers, cabbages, French beans, garden peas, green capsicums, okra, aubergines, tinda, parwal, karela and yams among fresh vegetables, and mixed vegetables, and pickles & chutneys in canned form.

Considering that India has the requisite resource base to produce fresh and processed vegetables and that market opportunities exist overseas it should be possible to reach an export level of 16,500 tonnes in fresh vegetables by 1975-76 provided suitable marketing arrangements are made in this regard.

COUNTRY REVIEW

1. FRANCE

With a per capita income of \$ 2,100, France represents the third largest market in the Continent for fruits and vegetables, fresh as well as processed, with an annual import bill of half a billion dollars. This is despite the sound production base in the country: average production during 1964-66 of fresh fruits and vegetables was 18.0 million tonnes, that of processed products being 865,000 tonnes. Exports are considerable; in fact, France is a net importer of processed fruits and vegetables.

Imports of fresh fruits averaged 1.6 million tonnes (\$ 312 million) during 1964-66, citrus fruits and bananas accounting for about 75% of the value. Imports of bananas are effected under a system of preferences intended to protect banana industry in the French Antilles and Francophone countries and Territories. Similarly, imports of citrus fruits are largely covered by special trading arrangements: for instance, imports of oranges from Morocco, Algeria and Tunisia are allowed free of duty. Notwithstanding, Spain is the largest supplier of oranges to the French market, accounting for a third of the total imports.

Tomatoes, potatoes, artichokes and onions account for bulk of the imports of fresh vegetables, which averaged 813,000 tonnes (\$ 148 million) during 1964-66. The remarkable rise in the imports of potatoes from \$ 13.6 million in 1964 to \$ 25.7 million in 1966 is a reflection of the growing demand for early potatoes, which account for the best part of imports. North African countries, Netherlands and Italy are the leading suppliers of fresh vegetables to France.

Exports of fresh fruits and vegetables averaged 287,000 tonnes (\$ 62 million) and 652,000 tonnes (\$ 44 million) respectively during 1964-66. Apples, table grapes, potatoes and cauliflowers are major items of exports. West Germany, Benelux countries, UK and Switzerland represent principal markets for the exports. Under the stimulus of planned development, a substantial rise is expected in the production of fruits and vegetables, with a corresponding rise in exports by 1970. Exports of fresh fruits are expected to go up from the current level of 280,000 tonnes to 700,000 tonnes by 1970, the anticipated increase in exports of fresh vegetables being from 150,000 tonnes to 200,000 tonnes.

Imports of processed products averaged 103,000 tonnes (\$ 29 million) of processed fruits and 18,000 tonnes (\$ 7 million) of processed vegetables during the past three years. Canned pineapples, supplied mostly by the former French colonies, Ivory Coast and Martinique, represent the largest item of canned fruits. Imports of fruit juices, comprising mainly citrus, pineapple and grape juices in single strength form, evinced a steep rise from 39,200 tonnes in 1964 to 51,600 tonnes in 1967. Imports of grape juice are attributable to Treaty obligations, as domestic production is substantial. Morocco, Ivory Coast and Algeria dominate the juice market. Tomato puree, supplied mainly by Morocco, Tunisia and Italy, represents by far the largest item of vegetable products imported.

Average exports of processed products during the past three years amounted to 57,400 tonnes (\$ 23 million)

of processed fruits and 63,300 tonnes (\$ 20 million) of processed vegetables. Grape juice, fruit peels and canned peas, mushrooms and french beans represent the major items of exports. Bulk of the exports are absorbed by other EEC members, West Germany being the leading buyer.

In view of the substantial tariff preferences extended to other EEC countries and former French colonies, prospects for third countries like India are strictly limited. However, there appears to be scope for exports of mangoes and lychees. Increased exports of onions during the off-season (March 15-May 15) will be possible if the packing is improved. The off-season (November-March) market for French beans offers appreciable scope for India, if proper packaging (preferably ventilated cardboard cartons) is ensured and shipments are made by air. Among the processed products, canned pineapples, mangoes and guava and pickles and chutneys seem to offer prospects for India.

2. FEDERAL REPUBLIC OF GERMANY

Economic growth of West Germany is most spectacular in the post-war period. With a per capita income of \$ 2,000, West Germany represents the largest market in the world for fresh fruits and vegetables and is next only to UK in imports of processed fruits and vegetables.

Total production of fresh fruits and vegetables averaged 19.7 million tonnes during 1964-66, of which potatoes alone accounted for 16.2 million tonnes. Apples are by far the most important among fruits, constituting 54% of the average production of 2.4 million tonnes of fruits; pears, plums and cherries are significant among other fruits. Cabbages and carrots are major items of production among vegetables, other than potatoes. There is a well developed processing industry in the country, output amounting to 592,000 tonnes of processed fruits and 566,000 tonnes of processed vegetables during 1966. Notwithstanding, imports are substantial, reflecting the high level of domestic consumption.

Imports of fresh fruits and vegetables averaged 2.9 million tonnes (\$ 398 million) and 2.1 million tonnes (\$ 281 million) respectively during 1964-66. Citrus fruits, bananas and apples among fruits, and tomatoes and cucumbers among vegetables represent leading items of imports.

Exports of fresh fruits and vegetables are much less in comparison, having averaged 14,000 tonnes (\$ 3 million) of fruits and 47,000 tonnes (\$ 16 million) of vegetables respectively over 1964-66. Seed potatoes represent by far the largest item of exports, plums, apples and cherries being important among the fruits exported.

Imports of processed fruits averaged 378,000 tonnes (\$ 94 million) during 1964-66, of which fruit juices constituted 116,000 tonnes (\$ 29 million). Major portion of the imports of juices comprise concentrates. Canned pineapples, peaches, apricots and mandarin orange segments represent other principal items of imports. Tomato concentrates, peas, beans, mushrooms and asparagus are important in the imports of processed vegetables, which averaged 218,000 tonnes (\$ 74 million) over 1964-66.

Exports of processed products are very limited, bulk of the production being absorbed by the domestic market itself, which is more lucrative than export markets. Average exports during 1964-66 amounted to 12,000 tonnes (\$ 4.6 million) of processed fruits and 4,000 tonnes (\$ 3.5 million) of processed vegetables. Apple sauce and soups represent major items of export.

Cooperative buying associations and international voluntary chains are becoming increasingly important in the import trade. Speciality stores, called Delicatessans, play a prominent role in the imports of exotic fruits and vegetables.

The Survey has revealed definite scope for exports of a wide range of fresh fruits and vegetables, including mangoes, melons, citrus fruits, grapes, lychees, pineapples, strawberries, aubergines, capsicums, french beans and onions. Mango and pineapple slices, mandarin orange segments, lychee wholes, mango pulp, juice concentrates and pickles and chutneys offer considerable prospects among processed products.

3. ITALY

One of the largest producers of horticultural crops in the Mediterranean belt, Italy is a leading supplier of fruits and vegetables, both fresh and processed.

Production of fresh fruits in Italy rose from 9.2 million tonnes in 1964 to 10.0 million tonnes in 1966, citrus fruits, apples, peaches, pears and grapes being the major crops. Production of fresh vegetables increased from 13.3 to 14.2 million tonnes between the two years. Over half of the production comprises potatoes and tomatoes, important among other crops being salad type vegetables, cabbages, cauliflowers and artichokes. Processing industry in Italy is highly developed, output averaging 274,000 tonnes of processed fruits and 518,000 tonnes of processed vegetables during 1964-66.

Despite the strong production base in the country, imports of fresh fruits and vegetables are appreciable. In fact, imports of fresh fruits, evinced a steep rise from \$ 26.1 million in 1964 to \$ 66.1 million in 1966. Bulk of the imports comprises bananas, Somalia and Ecuador together meeting about half of the requirements. Imports of fresh vegetables, comprising mainly seed potatoes, supplied mostly by the Netherlands, increased from \$ 30.4 million to \$ 46.4 million between 1964 and 1966.

Average exports of fresh fruits and vegetables amounted to 1.7 million tonnes (\$ 280 million) and 680,000 tonnes (\$ 93 million) respectively during 1964-66. Lemons and other citrus fruits, apples, peaches, pears and grapes account for bulk of the exports of fruits. Potatoes

and cauliflowers account for about half of the exports of vegetables, the balance comprising mainly salads, onions, carrots and tomatoes. Exports of fresh fruits and vegetables are absorbed mostly by other EEC members and UK.

Imports of processed fruits and vegetables are limited, averaging 13,000 tonnes (\$ 1.9 million) and 10,900 tonnes (\$ 2.4 million) respectively during 1964-66. Canned pineapples and olives represent major items of imports. Exports are substantial, shipments having averaged 118,000 tonnes (\$ 15.9 million) of processed fruits and 230,000 tonnes (\$ 61.1 million) of processed vegetables. Tomato products alone account for over half of the exports, canned fruits like peaches, apricots and cherries, and citrus and grape juices being important among other products. West Germany, UK and USA represent the largest markets for exports of processed products.

The Survey has revealed that Italy could be developed as an important outlet for Indian bananas and mangoes. Limited prospects exist for other tropical fruits like lychees and guavas. The scope for exports of processed products is not considerable, but canned pineapples, mangoes and guava seem to hold some promise.

4. THE NETHERLANDS

The Netherlands is one of the largest suppliers of fresh vegetables to the European markets being particularly known for 'hot house' vegetables such as tomatoes, cucumbers, carrots and lettuce, produced round

the year under controlled climatic conditions. Potatoes, however, represent the largest item of production as well as exports. Of the average total production of 5.2 million tonnes during 1964-66, potatoes alone accounted for 3.2 million tonnes. There is a well organised processing industry in the country, with an average output of 182,000 tonnes of processed fruits and 172,000 tonnes of processed vegetables. The Netherlands is a net importer of fruits, fresh as well as processed. There is considerable re-export trade, Rotterdam playing a prominent role in the distribution of fruits and vegetables, both fresh and processed, originating from other sources to Scandinavia, Germany and Switzerland.

Imports of fresh fruits averaged 386,000 tonnes (\$57 million) during 1964-66. Citrus fruits, imported mainly from Spain, Morocco and Israel, and bananas, supplied mostly by Colombia and Ecuador represent the principal items of imports. Imports of fresh vegetables, comprising mainly new potatoes and onions, averaged 175,000 tonnes (\$ 18 million) during 1964-66. As regards exports, vegetables are by far the more important, shipments having averaged 820,000 tonnes (\$ 202 million) during 1964-66, as against the average exports of 144,000 tonnes (\$ 23 million) of fruits. Exports of fresh vegetables comprise mainly 'hot house' produce, particularly tomatoes and cucumbers, seed potatoes and potatoes. Cherries and apples are the most important among fruits exported. About 75% of the exports of fruits and 90% of the exports

of vegetables are absorbed by the other EEC countries, UK being important among other markets.

Imports of processed fruits and vegetables averaged 82,000 tonnes (\$ 30.7 million) and 38,000 tonnes (\$ 14 million) during 1964-66. Canned pineapples, pears, fruit cocktail and orange juice among processed fruits and dehydrated onions and canned beans among processed vegetables represent major items of imports. Exports of processed products averaged 126,000 tonnes comprising 48,000 tonnes (\$ 18 million) of processed fruits and 78,000 tonnes (\$ 78 million) of processed vegetables during 1964-66

There is scope for exports of mangoes and lychees from India. India can also hope to secure an appreciable share of the off-season market for citrus fruits and onions, provided production of suitable varieties is developed. Sizable exports of pickles and chutneys could be developed if the quality is improved. Pineapple slices, mandarin orange segments, citrus juices and processed beans offer considerable prospects, if competitive prices could be offered.

5. BELGIUM-LUXEMBURG

As a supplier of certain specialised items like chicoree witlof and hothouse grapes and tomatoes, Belgium is well established in the European markets. Production of fruits, of which apples are the most

important, averaged 316,000 tonnes during 1964-66. Of the average production of 2.7 million tonnes of vegetables, potatoes alone account for about 60%. Output of processed fruits and vegetables averaged 35,000 tonnes and 93,000 tonnes respectively over 1964-66. Dependence on imports is considerable, in respect of fresh as well as processed fruits and vegetables.

Citrus fruits and bananas represent the major items in the imports of fresh fruits, which averaged 337,000 tonnes (\$ 64 million) during 1964-66. Spain and Israel for citrus fruits and Ecuador and Colombia for bananas are the leading suppliers. Imports of fresh vegetables, of which potatoes are the most important, averaged 386,000 tonnes (\$ 41 million) during 1964-66; the Netherlands, France and Italy are the major suppliers.

Exports of fresh fruits and vegetables averaged 78,000 tonnes (\$ 13 million) and 351,000 tonnes (\$ 48 million) respectively during 1964-66. Strawberries and apples represent major items of fruits exported. Chicoree witlof is by far the largest item of vegetables exported, others including lettuce, potatoes, beans and tomatoes. West Germany absorbs more than 50% of the exports of fruits, France being equally significant as regards exports of vegetables. The Government undertakes active publicity for the Belgian produce in the foreign markets.

Imports of processed fruits and vegetables averaged 48,000 tonnes (\$ 14 million) and 43,000 tonnes (\$ 18 million) respectively during 1965-66. Canned pineapples and peaches, citrus, grape and tomato juices and canned tomato wholes

represent major items of imports. USA is the most important among non-EEC suppliers.

Exports represent a major outlet for the processing industry, accounting for about 60% of the total output. Average exports of processed vegetables, at 70,000 tonnes (\$ 16 million) during 1965-66, were much larger than those of processed fruits, which amounted to 14,000 tonnes (\$ 4 million). Jams, jellies, etc., canned fruits like strawberries and cherries and canned vegetables such as peas, cucumbers and asparagus account for the bulk of exports.

The Survey has revealed immediate scope for exports of bananas. Citrus fruits could be exported in considerable quantities, depending on the acceptability of the present Indian varieties. Limited prospects are envisaged for mangoes and lychees, which need to be shipped by air. Off-season advantages offered by onions are considerable. Pineapple slices represent a major item of imports, but prospects depend on India's ability to offer competitive prices. There is appreciable scope for exports of mango slices and juices, particularly mango, citrus and tomato juices.

6. UNITED KINGDOM

The United Kingdom represents the largest market in Europe for processed fruits and vegetables, and as regards the fresh produce, it is next only to West Germany.

Average production of fresh vegetables, mostly potatoes, during 1964-66 amounted to 10.1 million tonnes, production of fresh fruits, comprising mainly apples, being limited to 770,000 tonnes. Production of processed fruits and vegetables averaged 95,000 tonnes and 674,000 tonnes respectively during 1964-66.

Imports of fresh fruits averaged 1.4 million tonnes (\$ 345 million) during 1964-66. Citrus fruits, bananas and apples represent major items of imports. While bananas are supplied mostly by the Caribbean countries, other fruits are imported mainly from Spain, Israel, Australia and South Africa. Tomatoes, potatoes and onions are the most important in the imports of fresh vegetables, which remained steady at 1.0 million tonnes (\$ 204 million) during 1964-66.

Exports of fresh fruits, at an average level of 12,000 tonnes (\$ 2.5 million), are limited. Exports of fresh vegetables, comprising mostly seed potatoes and ware potatoes, evinced a steep rise from 106,000 tonnes (\$ 12.3 million) in 1964 to 284,000 tonnes (\$ 25.1 million) in 1966.

Imports of processed fruits and vegetables averaged 511,000 tonnes (\$ 143 million) and 185,000 tonnes (\$ 44 million) respectively during 1964-66. Peaches, pears, pineapples, grapefruit segments and mandarin orange segments represent major items among canned fruits. About 65% of the juices imported comprise citrus juices, important among others being grape and tomato juices. Canned whole tomatoes and

tomato puree account for about two-thirds of the total vegetable products imported into UK.

Exports of processed products, at an average of 17,000 tonnes (\$ 7 million) of processed fruits and 19,000 tonnes (\$ 6 million) of processed vegetables represent a minor proportion of the total output. Jams, tomato catsup and canned peas and beans represent major items of exports, which are directed mainly to West Germany, Malaysia, Singapore and Canada.

UK represents the largest market in Europe for the current Indian exports of fruits and vegetables, fresh as well as processed. The Survey has shown that there are definite prospects for increased exports. Apart from mangoes, there is appreciable scope for exports of grapes (during the off-season, February-May), Lychees, chikcoos and onions in the short run. Long term prospects offered by citrus fruits are substantial. India can hope to secure an appreciable share of the large canned pineapple market, if competitive prices could be offered. Sizable exports could be built of canned fruits like mangoes, lychees, guavas and canned vegetables like karela and parwal, if proper quality is ensured.

7. SPAIN

Spain is the largest supplier of fresh citrus fruits to world markets, claiming a share of 30% of world exports. Citrus fruits accounted for 50% of the average production of 4.2 million tonnes of fruits in Spain during

1964-66, the balance comprising mainly melons, bananas, apples, peaches and table grapes. Onions, cabbages, capsicums, cauliflowers and artichokes account for the bulk of the production of vegetables, which averaged 2.7 million tonnes over 1964-66. There is a well developed processing industry in the country, with an average output of 423,000 tonnes. Spain is a major supplier of tomato products and citrus concentrates.

Imports of fresh fruits into Spain are insignificant, having averaged \$ 0.3 million during 1964-66. Imports of fresh vegetables, comprising mostly ware potatoes, averaged 252,000 tonnes worth \$ 16.4 million over 1964-66; bulk of the supplies come from UK, France and Netherlands. Of the average exports of 1.6 million tonnes (\$ 169 million) during 1964-66, citrus fruits alone accounted for 1.3 million tonnes (\$ 134 million). Grapes and bananas are important among other fruits exported. Exports of fresh vegetables, comprising mainly tomatoes and early potatoes, averaged 488,000 tonnes (\$ 50 million) during 1964-66. Bulk of the exports of fruits as well as vegetables are absorbed by West Germany, UK, France and the Benelux countries.

With a substantial production base in the country, imports of processed fruits and vegetables are limited, the average for 1964-66 being 7,700 tonnes (\$ 2.6 million). Pineapple slices and juice claim a major share of the imports. Exports of processed fruits and vegetables, comprising mainly tomato and citrus products, rose from 194,000 tonnes (\$ 60 million) in 1964 to 207,000 tonnes (\$ 72 million) in 1966. Bulk of the exports are absorbed by USA, other important markets including UK, West Germany and France.

With a view to strengthening the horticultural industry, the Government of Spain is taking active steps to develop production in selected areas on an intensive basis. Efforts are being made to transform the two fertile valleys, Seville and Badajoz into areas of the lowest cost of cultivation in the entire Europe. The Government is also encouraging amalgamation of small processing units into consortia, so as to improve operational efficiency.

8. SWITZERLAND

With a high per capita income of \$ 1,450, Switzerland offers a large market for fruits and vegetables, both fresh and processed. Average production of fresh fruits and vegetables during 1964-66 amounted to 587,000 tonnes and 1.5 million tonnes respectively. Apples among fruits and potatoes among vegetables account for the bulk of production. Canned beans and peas account for about 40% of the average production of 130,000 tonnes of processed products; apple sauce, prunes, jams and soups are important among other products.

Imports of fresh fruits, comprising mainly oranges, bananas, grapes and peaches, rose from 305,000 tonnes (\$ 72 million) in 1964 to 340,000 tonnes (\$ 82 million) in 1966. Potatoes, lettuce, tomatoes and cauliflowers represent major items in the imports of fresh vegetables, which increased from 147,000 tonnes (\$ 32 million) to 180,000 tonnes (\$ 41 million) between 1964 and 1966.

Exports of fresh fruits and vegetables are limited, having averaged 10,000 tonnes (\$ 0.6 million) and 43,000 tonnes (\$ 2.5 million) respectively during 1964-66. Major items of exports are cherries among fruits and potatoes among vegetables.

Imports of processed fruits averaged 22,000 tonnes (\$ 8 million) during 1964-66, canned pineapples, grape juice and citrus juices representing major items of imports. Tomato products and canned asparagus account for bulk of the imports of processed vegetables, which averaged 30,000 tonnes (\$ 13 million) during 1964-66.

Exports of processed fruits and vegetables averaged 3,000 tonnes (\$ 1 million) and 7,000 tonnes (\$ 9 million) respectively during 1964-66. Fruit pulps and purees constitute the bulk of exports of processed fruits, while exports of processed vegetables comprise mostly soups, which enjoy excellent reputation in many world markets.

Cooperative Unions are very active in the imports of fresh fruits and vegetables. Wholesale buying organisations are becoming increasingly important in the imports of processed products.

A notable feature of publicity and promotion in Switzerland is that the Government collects taxes on alcohol and uses the revenue for promoting consumption of fresh fruits and fruit juices.

On the basis of the Survey, there appears to be appreciable scope for exports of fresh mangoes, citrus fruits, grapes, pineapples, aubergines and capsicums.

Canned mangoes, pineapples and guava, juice concentrates, canned okra and pickles and chutneys are important among processed products offering prospects for India.

9. SWEDEN

With a per capita income of \$ 2,700, Sweden represents one of the most affluent countries in the world. The average production of fresh fruits and vegetables during 1964-66 was 2.0 million tonnes, of which the share of fruits was limited to 305,000 tonnes. Apples and potatoes are the largest items in the production of fruits and vegetables respectively. Production of processed products averaged 75,000 tonnes of processed fruits and 102,000 tonnes of processed vegetables during 1964-66. Despite the sizable production base in the country, Sweden is a major market in Europe for both fresh and processed fruits and Vegetables, with an annual import bill of over \$ 130 million.

Imports of fresh fruits increased from 274,000 tonnes (\$ 72 million) in 1964 to 318,000 tonnes (\$ 87 million) in 1966. Oranges, bananas, apples and grapes represent major items of imports. Imports of fresh vegetables rose faster from 130,000 tonnes (\$ 28 million) to 185,000 tonnes (\$ 33 million) between 1964 and 1966. Tomatoes represent the largest item of imports, potatoes, onions, lettuce and cauliflowers being important among other vegetables.

Exports of fresh fruits and vegetables are limited, having averaged 17,000 tonnes (\$ 6.2 million) over 1964-66. Strawberries and peas represent major items of exports, bulk of the exports being directed to UK.

Average imports of processed fruits and vegetables during 1964-66 amounted to 40,000 tonnes (\$ 14 million) and 11,000 tonnes (\$ 5 million) respectively. Canned peaches, coming mostly from USA, and citrus juices, supplied mainly by Israel and USA, represents major items of processed fruits. About 60% of the total imports of fruit juices are in concentrated form, both for industrial use and household use. Imports of processed vegetables comprise mostly mixed vegetables, tomato pulp and puree, canned brussels sprouts and mushrooms.

Exports of processed fruits and vegetables are insignificant, having averaged 2,200 tonnes (\$ 1.2 million) during 1964-66. Considerable rise in exports, however, is expected during the next few years.

The sophisticated Swedish market is highly brand-conscious, in respect of fresh as well as processed fruits and vegetables. Large amounts are spent on publicity and promotion by leading suppliers. Besides expensive distribution of point-of-sale material, prize competitions among retailers and special weekly sales and concessional offers represent means widely adopted for promoting sales of fresh fruits and vegetables. Major proportion of the sales of processed products are effected under distributors' labels.

Important among items identified as offering prospects for India are mangoes, grapes and citrus among fresh fruits, and canned pineapples, mangoes and guavas and citrus juices among processed products.

10. DENMARK

Denmark is one of the most affluent countries, with a per capita income of \$ 2,300. Average production of fresh vegetables during 1964-66 was 1.2 million tonnes, while that of fresh fruits was much less at 109,000 tonnes. Apples and potatoes are by far the most important among fruits and vegetables produced. The processing industry is small but well organised. Output of processed fruits rose from 30,000 tonnes in 1964 to 39,000 tonnes in 1966, the corresponding rise in processed vegetables being from 28,000 tonnes to 35,000 tonnes. Dependence on imports is substantial in respect of fresh fruits and processed fruits and vegetables. Denmark is a leading supplier of fresh vegetables.

Citrus fruits, bananas, grapes and apples account for bulk of the imports of fresh fruits, which averaged 125,000 tonnes (\$ 27 million) during 1964-66. Average imports of fresh vegetables were much less at 28,000 tonnes (\$ 7 million).

Exports of fresh fruits, comprising mainly apples, are limited, having averaged 12,000 tonnes (\$ 2 million) during 1964-66. Shipments of fresh vegetables averaged 322,000 tonnes (\$ 10 million) over 1964-66. Potatoes, cauliflowers, cabbages and salads represent major items of exports. Bulk of the exports are absorbed by Sweden, West Germany providing the largest market outside Scandinavia.

Imports of processed fruits and vegetables averaged 29,000 tonnes (\$ 9 million) and 35,000 tonnes (\$ 9 million) respectively during 1964-66. Canned peaches, pineapples and apricots, citrus juices, tomato puree and canned asparagus represent major items of imports.

Total exports of processed fruits and vegetables averaged 13,000 tonnes (\$ 5.0 million) during 1964-66, of which the share of processed fruits was limited to 4,000 tonnes (\$ 1.6 million). Exports are directed mainly to other Scandinavian countries and West Germany.

Keen attention is paid to sales promotion in the Danish market. Large amounts are spent on publicity and promotion by the foreign suppliers: for instance, the United Fruit Company is estimated to have spent \$ 67,000 for introducing the Chiquita bananas in the market in 1967. In addition, regular promotional campaigns are carried out by the local importers, through an organisation called 'Frugt Information', to which each importer contributes 0.3% of the value of his imports.

With the growing importance of consumer cooperatives and corporate chains, centralised buying and selling is becoming a major characteristic of the Danish market, particularly in respect of processed products. It is estimated, for instance, that six buying organisations control 90% of the total food market.

Citrus fruits, onions, canned pineapples and mandarin orange segments, citrus and tomato concentrates and pickles and chutneys have been identified as major items offering prospects for India.

11. GREECE

With a per capita income of \$ 690, Greece is among the less developed countries of the OECD group. Greece produces a wide range of fruits and vegetables, of which citrus, water melons, apples, table grapes, potatoes, tomatoes and cabbages represent major items. Canning industry in Greece is of comparatively recent origin.

Imports of fresh fruits and vegetables into Greece averaged 26,000 tonnes (\$ 3.4 million) during 1965-66. Imports comprise almost exclusively bananas and seed potatoes, supplied mainly by Israel and Ireland respectively. Exports of fresh fruits and vegetables averaged 234,000 tonnes (\$ 26.7 million) during 1965-66, of which the share of vegetables was limited to 17,000 tonnes (\$ 1.7 million). Oranges represent the leading item of exports, followed by lemons, grapes, peaches and apples. West Germany is the most important market, others including Austria, Yugoslavia and USSR.

Imports of processed fruits and vegetables are insignificant, being of the order of 1,000 tonnes. This is mainly a reflection of the comparatively low standards of living in Greece, rather than adequate domestic production. Exports of processed fruits averaged 28,900 tonnes (\$ 6.4 million) and those of processed vegetables

16,200 tonnes (\$ 6.4 million) during 1965-66. Exports comprise mainly fruit juices, fruit pastes, tomato puree and canned fruits like peaches and apricots. Major markets include West Germany, UK and France.

The government grants liberal subsidies both for production and exports of horticultural items with a view to making the Greek products competitive in the world markets. In addition to direct agricultural support (\$ 27 million in 1967), the government subsidises the purchase of fertilizers and machinery through controlled prices. Incentives are paid to the growers who, for instance, opt to substitute varieties like Clingstone peaches. Price support is extended to exportable products ranging from Drachma 0.30 per kg of peaches to Drachma 0.50 per kg of Washington Navel oranges. Besides, for example, A2½ cans are made available to exporters at an approximate rate of \$ 55 per 1,000 cans as against \$ 65 for the domestic market.

12. YUGOSLAVIA

With a sizable horticultural base, Yugoslavia is a net, though not significant, exporter of fresh fruits and vegetables. Grapes, plums and apples among fruits and potatoes, cabbages and onions among vegetables are the major items, accounting for the bulk of production. About 60% of the production of fresh fruits, comprising mainly grapes and plums, is consumed by the local brewery industry. On the average, 200,000 tonnes of fresh fruits and 63,000 tonnes of fresh vegetables were used annually by the processing industry during 1964-66.

Average imports of fresh fruits amounted to 90,500 tonnes (\$ 30.0 million) during 1964-66, those of fresh vegetables being much less at 18,000 tonnes (\$ 1.8 million). Citrus fruits, supplied mainly by UAR, Greece, Israel and Italy, account for the bulk of imports. Imports of bananas recorded a sharp rise from 8,000 tonnes to 20,400 tonnes between 1964 and 1966; Guinea is the largest supplier, others including Israel and Ethiopia. Potatoes represent by far the largest item of vegetables imported, supplies coming mostly from Poland, UAR and Netherlands. Imports of potatoes more than doubled from 7,600 tonnes in 1964 to 17,900 tonnes in 1966. Exports of fresh fruits registered a sharp decline from 61,200 tonnes in 1964 to 19,500 tonnes in 1966, reflecting mainly reduced exports of plums and grapes, due to increasing use by the local wine industry on the one hand and growing local consumption on the other. Exports of vegetables increased from 17,400 tonnes to 30,700 tonnes between 1964 and 1966. Austria and Czechoslovakia for fruits and West Germany, USA and UK for vegetables are the major markets.

With rising domestic production, imports of processed fruits declined sharply from the average level of 20,000 tonnes during 1961-64 to 4,000 tonnes in 1966. Processed vegetables, supplied mainly by USSR, Ceylon, Greece and Tunisia and citrus juices, obtained mainly from Greece and Israel, represent the major items of imports. Exports of processed fruits and vegetables averaged \$ 14.4 million during 1964-66; West Germany provides the largest market, others including UK and Italy.

The Government is taking specific steps to bring about intensive development on a selective basis, with accent on peaches, cherries, apples and pears. A special measure aimed at integration of horticulture and the processing industry relates to the encouragement of enterprises known as 'Kominaths', which own large farms and have adequate processing facilities.

Tariffs are high and imports are mostly covered by bilateral trade agreements. There does not appear to be any scope for exports of fresh fruits and vegetables to Yugoslavia. The Survey has, however, revealed that considerable scope exists for exports of mango pulp which can be supplied in 5 kg tins for reconstitution into nectar.

13. LEBANON

With an estimated production of 514,000 tonnes of fruits and 354,000 tonnes of vegetables in 1966, Lebanon is a leading exporter of fresh fruits and vegetables to West Asian countries. Major items of production include citrus fruits, apples, grapes, bananas, potatoes, onions and tomatoes. Processing of fruits and vegetables is limited, current output being estimated at 30,000 tonnes.

Imports of fresh fruits averaged 5,000 tonnes during 1964-66, of which grapes alone accounted for 70%. Imports of vegetables, comprising mainly tomatoes, cucumbers, haricot beans and onions, averaged 20,000 tonnes during 1964-66. Imports represent mainly off-season requirements. The domestic market being limited, a major

portion of the production of fresh fruits and vegetables is diverted to overseas markets. Exports of fresh fruits and vegetables averaged 297,000 tonnes (\$ 21 million) during 1964-66. Apples, oranges and lemons account for the bulk of exports of fruits, while dried beans and potatoes are the largest items of vegetables exported. The neighbouring Arab countries provide the major outlet for exports, UK being important among other markets.

Imports of processed fruits and vegetables into Lebanon are not significant. Exports are currently estimated at 2,000 tonnes, comprising mainly citrus juices and tomato products. Exports are directed mainly to the neighbouring Arab markets, where Lebanon enjoys substantial tariff preferences. The Government offers incentives for promotion of exports, including that of making sugar available at \$ 0.09 per kg for export purposes as against the normal price of \$ 0.20 per kg.

The Government has set up a central organisation, the Lebanese Fruit Office, for promoting the exports of Lebanese fruits in a systematic manner. Included among the functions of this organisation are: a) procurement of suitable varieties and qualities; b) evolving and enforcing standards of grading and packing; c) organising sales promotion for Lebanese fruits in overseas markets; d) undertaking negotiations with the importers for supply contracts. Besides, the Fruit Office formulates export policies and fixes minimum prices in consultation with growers, so as to minimise inter-se competition.

14. UNITED ARAB REPUBLIC

United Arab Republic is basically an agricultural country, cotton representing the main cash crop. Dependence on imports is limited in respect of fruits and vegetables, fresh as well as processed. UAR is a leading exporter of onions, both fresh and processed, to world markets.

Imports of fresh produce, limited mainly to seed potatoes and dried haricot beans, increased from 14,700 tonnes (\$ 1.3 million) in 1965 to 23,400 tonnes (\$ 2.6 million) in 1966. Onions represent by far the largest item of exports, having accounted for 57% of the total value during 1965-66. Other items include potatoes, oranges and melons. Total exports of fresh fruits and vegetables declined from 281,000 tonnes (\$ 20.8 million) in 1965 to 244,000 tonnes (\$ 19.1 million) in 1966, reflecting largely reduced exports of onions. Bulk of the exports are undertaken by State-owned organisations, which have their own packing houses, equipped on modern lines, in the midst of growing areas.

Imports of processed fruits and vegetables are insignificant, having amounted to 900 tonnes (\$ 0.3 million) in 1966. Dehydration is a major sector of the processing industry in UAR. Virtually the entire output of dehydrated onions is meant for exports. Canned vegetables represent another major sector of the industry, production having amounted to 7,400 tonnes in 1966; bulk of the output is consumed locally. Total

output of fruit juices is currently of the order of 5,000 tonnes, a sizable proportion of which is exported, mainly to the Gulf States. Mango nectar represents a major item of production as well as exports. Output of canned fruits is very limited. Total exports of processed fruits and vegetables averaged 7,000 tonnes worth \$ 3.2 million during 1965-66, dehydrated onions alone having accounted for 76% of the total value. UK represents the largest market for dehydrated onions, while the Arab markets provide the major outlet for other products.

Sugar is made available in UAR for export of mango nectar at \$ 6 per quintal as against \$ 36 for the domestic market.

Foreign trade in UAR is strictly under Government control and most of the imports are covered under trade agreements. Seed potatoes represent the only item that seems to offer some limited prospects for India.

15. IRAQ

The economy of Iraq is based mainly on oil revenues. Dates represent the principal agricultural crop. Iraq depends largely on imports in respect of selected fresh fruits and vegetables and processed products. The local processing industry is not yet well developed, production being confined mostly to jams and certain canned vegetables. In view of the high import tariffs, trade is largely confined to other Arab countries, particularly Lebanon and Jordan, which enjoy substantial tariff preferences in Iraq.

Imports of fresh fruits and vegetables averaged 121,000 tonnes valued at \$ 9.6 million during 1964-66. Tomatoes, apples, potatoes and bananas are the major items, together accounting for 65% of the total value of imports. Over 60% of the total imports come from Lebanon and Jordan. Exports of fresh fruits and vegetables, comprising mostly water melons and sweet melons shipped entirely to Kuwait, registered a steep rise from 1,300 tonnes (\$ 39,000) in 1964 to 8,600 tonnes (\$ 227,000) in 1966.

Imports of processed fruits and vegetables increased from 10,400 tonnes (\$ 2.5 million) in 1964 to 13,800 tonnes (\$ 3.3 million) in 1966, reflecting the rise in the imports of tomato puree, which is by far the largest item of imports, accounting for more than 90% of the total value. Bulgaria and Italy, with which Iraq has trade agreements, are the major suppliers. India, which is an established supplier of pickles and chutneys to Iraq, claims a share of 4% of the total value of imports. Exports of processed products, which are limited to date juice, are of the order of \$ 1.3 million, shipped mainly to Syria, West Germany and Lebanon.

Imports are subject to rigid licensing restrictions and high tariffs. Prospects for India are very limited; even the current stakes in respect of pickles and chutneys appear to be in jeopardy. There is, however, scope for entering into franchise agreements with processors, under which pickles and chutneys would be manufactured in Iraq from mango slices in brine shipped from India and marketed under the Indian labels.

16. KUWAIT

The oil-rich Sheikdom of Kuwait is one of the most affluent countries in the world, with per capita income in excess of \$ 3,000. There is scarcely any production of fruits and vegetables, either fresh or processed, and all the requirements are met from imports. Kuwait follows a policy of free commerce. Imports of fresh fruits and vegetables are exempt from duty, 4% being levied on those of processed products.

Imports of fresh fruits and vegetables increased from 95,000 tonnes (\$ 7.9 million) in 1965 to 108,000 (\$ 9.3 million) in 1966. Imports comprise mainly citrus fruits, bananas, apples, water melons and melons, onions, tomatoes and potatoes. Lebanon, Jordan, Iran and India are the leading suppliers. India is a major exporter of bananas, onions and a wide range of other fresh vegetables.

Imports of processed fruits and vegetables averaged 14,000 tonnes (\$ 4.8 million) in 1965-66. Tomato paste is a principal item of imports accounting for about 35% of the total value, supplies coming mostly from Italy. USA, UAR, UK, and Australia are important among other suppliers. India's present stakes in this market are largely limited to mango nectar, of which India is a major exporter, the main competitor being UAR. India's share in the total value of imports of processed products, however, was no more than 4% during 1966.

The Survey has revealed that considerable scope exists for stepping up exports from India of not only bananas and mangoes, which are moving in sizable quantities at present, but also of a wide range of other fresh fruits and vegetables, provided efficient transport facilities are made available. As regards exports of processed fruits and vegetables, there is need for making adequate foreign exchange available for facilitating effective publicity and promotion, which play a crucial role in expanding exports.

17. BAHRAIN

The oil industry is the mainstay of the economy of Bahrain, contributing about 75% of the national income. There is limited production of fresh fruits and vegetables but scarcely any processing, most of the requirements being met from imports. There are no restrictions on imports, a uniform duty of 5% ad valorem being levied on all imports.

Bahrain imports annually an estimated total of 15,000 tonnes of fresh fruits and vegetables and 2,000 tonnes of processed products. India is the second largest supplier of fresh fruits and vegetables, being next only to Lebanon. Imports of processed items emanate mainly from UK, Australia and USA.

India is a leading supplier of bananas, mangoes and a wide range of other fresh fruits and vegetables, but its share in the imports of processed products is very limited, exports being limited mainly to mango pickles and chutneys. It is envisaged that with improved shipping services to the Gulf States, it will be possible to increase exports of fresh fruits and vegetables considerably.

18. THAILAND

Agriculture is the mainstay of Thailand's economy, contributing about 35% of the national income and 80% of the aggregate exports. Thailand is by and large self-sufficient in fruits and vegetables. It is a leading exporter of mangoes and beans (all kinds) and has the potential of becoming an important exporter of bananas. Although Thailand is one of the largest producers of fresh pineapples, processing of the fruit is negligible yet, reflecting the relatively undeveloped processing industry in the country.

Imports of fresh fruits and vegetables averaged 3,500 tonnes (\$ 0.9 million) during 1965-66. Mushrooms, onions and shallots represent the major items of imports, accounting for over 90% of the total value. Japan, Taiwan, and South Korea are the leading suppliers. India, a major exporter of shallots to Thailand, accounted for 11% of the total imports during 1965-66. Exports of fresh fruits and vegetables increased from 80,000 tonnes (\$ 8.6 million) in 1965 to 88,000 tonnes (\$ 9.7 million) in 1966, reflecting a rise in exports of beans, which in fact accounted for more than 80% of the total exports. Thailand is a leading supplier of mangoes, exports having averaged 2,600 tonnes during 1965-66,

shipped almost entirely to Singapore and Malaysia. Bananas represent another major item of the fruits exported, but shipments depend mainly on the supply position of Taiwan, which is an established exporter of bananas to Japan.

Imports of processed fruits and vegetables comprising mainly canned vegetables and juices, are very limited, having averaged 2,000 tonnes (\$ 1.2 million) during 1965-66. Exports of processed products are also very limited, averaging 800 tonnes during 1965-66. However, with the efforts being made by the Government to develop the processing industry, increased exports can be expected, particularly of canned pineapples, in the next few years.

Imports of fruits and vegetables, both fresh and processed, are subject to high tariffs. Apart from shallots currently moving in sizable quantities, prospects for India appear negligible, except possibly in the case of seed potatoes.

19. PHILIPPINES

Philippines is mainly an agricultural country, agriculture contributing about one-third of the national income and 80% of the country's export earnings. Total production of fruits and vegetables averaged 2.4 million tonnes during 1964-66, of which bananas, pineapples and mangoes are the most important. Philippines is a major producer and

exporter of canned pineapples, with an estimated output of 60,000 tonnes in 1966. Pineapple processing industry in Philippines is essentially an extension of the operations of leading Hawaiian packers, Del Monte and Dole, the latter having entered the field only three years ago. Lower unit costs of land and labour, coupled with lower corporate tax, constituted the main attraction for these canners for choosing Philippines as the base of expansion of their operations. Output of other processed products in 1966 has been reckoned at 55,000 tonnes. Imports of fruits and vegetables, fresh as well as processed, are limited; most of the supplies come from USA, with which Philippines has special trade relations.

Imports of fresh fruits and vegetables averaged 17,700 tonnes (\$ 2.8 million) during 1964-65, apples, grapes and citrus fruits representing the major items imported. USA is the largest supplier, accounting for over 50% of the total value of imports; other suppliers include Hong Kong and Taiwan. Philippines is a leading exporter of mangoes, shipments having increased from 2,500 tonnes (\$ 452,000) in 1964 to 3,200 tonnes (\$ 585,000) in 1965; virtually the entire exports are directed to Hong Kong. Exports of other fruits and vegetables are insignificant, having averaged \$ 11,000 during 1964-65. The Survey has revealed, however, that with the recent operations of the

Standard Fruit Company in Philippines, substantial exports of bananas are likely in the next few years.

Imports of processed fruits and vegetables are limited, having averaged 3,300 tonnes (\$ 625,000) during 1964-65. USA is by far the largest supplier, accounting for about 75% of the total value of imports. Exports of canned pineapples rose from 33,600 tonnes (\$ 7.2 million) in 1964 to 41,000 tonnes (\$ 9.0 million) in 1965. Further rise is expected in the next few years, with the contemplated expansion of Dole operations in Philippines. USA absorbs bulk of the exports; other important markets include UK, West Germany and Netherlands. Exports of other processed products, comprising mainly fruit salads exported to USA, increased from \$ 0.9 million to \$ 1.5 million between 1964 and 1965.

Imports of fruits and vegetables, fresh as well as processed, are effectively checked through high tariffs. Prospects for India are negligible.

20. HONG KONG

Hong Kong depends mostly on imports for requirements of fruits and vegetables, local production being limited to 65,000 tonnes of vegetables. There is a limited production of 35,000 tonnes of processed fruits and vegetables in the

colony, which is supplemented by imports. There is considerable re-export trade in fruits and vegetables, both fresh and processed.

Imports of fresh fruits and vegetables registered an impressive rise from 156,000 tonnes (\$ 24.2 million) in 1964 to 210,000 tonnes (\$ 30.7 million) in 1966. Oranges alone account for about 40% of the total value of imports, apples and bananas being important among other fruits imported; USA, China and South Africa are the leading suppliers. Imports of fresh vegetables, supplied mostly by China, increased from 267,000 tonnes (\$ 14.7 million) to 293,000 (\$ 16.1 million) between 1964 and 1966. Re-exports of fruits went up from 13,900 tonnes (\$ 2.4 million) in 1964 to 29,900 tonnes (\$ 4.0 million) in 1966. Exports of vegetables, representing mostly re-exports, rose from \$ 6.8 million in 1964 to \$ 12.1 million in 1966, although there was a decline in terms of quantity from 133,000 tonnes to 122,000 tonnes between the two years.

Imports of processed products during 1964-66 evinced an increase from 63,300 tonnes (\$ 14.6 million) in 1964 to 65,800 tonnes (\$ 18.2 million) in 1966. Exports, comprising largely re-exports and partly local production, increased from 9,400 tonnes (\$ 3.9 million) to 15,800 tonnes (\$ 4.7 million) between the two years. Processed vegetables claim a share of 70% in terms of value, in imports as well as exports.

The Survey has revealed that scope exists for exports of fresh mangoes, Mosambi and Malta, which should be explored through shipments of trial consignments. There appears to be considerable scope for exports of canned mango slices, mango nectar and mango pulp. Opening of a large departmental store by the Indian Government in Hong Kong is considered the best means of promoting exports.

21. SINGAPORE

A prominent entrepot centre in South East Asia, Singapore, with a per capita income of \$ 1,000, is among the most affluent countries in the region. Local production of fresh fruits and vegetables being very limited, most of the requirements are met from imports. Singapore serves as a point of entry for a sizable proportion of the imports into Malaysia. Pineapple canning is well established in Singapore, bulk of the output being exported.

Total imports of fresh fruits and vegetables into Singapore increased from 228,000 tonnes (\$ 24.1 million) in 1964 to 252,000 tonnes (\$ 27.7 million) in 1966. Oranges, bananas, apples, grapes, potatoes and onions represent the major items of imports. China, Australia and Malaysia are the leading suppliers, accounting for 62% of the total value of imports during 1964-66; other suppliers include Taiwan

and India. The entire requirements of bananas and pineapples, the latter mostly for canning in Singapore, are met through imports from Malaysia. India's present stakes in the market are limited to onions, of which it is the largest supplier, accounting for 55% of the total volume of imports. Exports of Singapore, comprising mostly re-exports to Malaysia, averaged 67,000 tonnes (\$ 13.1 million) during 1964-66. Oranges, apples, potatoes and onions are the major items of exports.

About 70% of the imports of processed fruits and vegetables, which averaged 71,300 tonnes during 1964-66, comprise canned pineapples from Malaysia for re-exports. China, UK and USA are the leading suppliers of other processed products, which are partly re-exported to Malaysia. Exports of Singapore, representing mostly re-exports, averaged 77,000 tonnes (\$ 18.2 million) during 1964-66. Keen on encouraging exports of the local processing industry, the Government provides certain incentives, such as making sugar available at a lower rate of \$ 0.10 per kg or about half the normal price, and limiting the corporate profit tax to 4% in respect of export earnings as against 40% applicable to profits accruing from domestic sales.

Imports of fresh fruits and vegetables are exempt from tariffs. A duty of \$ 0.09 per kg of sugar content is

levied on processed products, as a measure of protection to the local processing industry. The Survey has revealed that there is considerable scope for exports of fresh fruits such as mangoes and citrus fruits and certain vegetables like cabbages from India, if efficient shipping services are made available. The scope for increasing exports of processed fruits and vegetables would depend mainly on the ability of the Indian exporters to enter into tie-up agreements with leading distributors who can be relied upon to carry out the requisite publicity and promotion.

22. MALAYSIA

Agriculture is the mainstay of the economy of Malaysia. Pineapples and bananas represent the principal horticultural crops. Requirements of other fruits and vegetables are largely met through imports, bulk of which are routed through Singapore. Malaysia is one of the largest producers and exporters of canned pineapples. Pineapple canneries are statutorily required to own a minimum plantation of 1,500 acres (607 hectares) each. However, processing outside pineapples is limited; imports of processed fruits and vegetables are considerable.

Imports of fresh fruits and vegetables averaged 109,000 tonnes (\$ 18.1 million) during 1965-66. Oranges,

apples, onions and potatoes account for the bulk of imports. China and Australia are the leading suppliers, followed by Taiwan, USA and Thailand. India is the premier supplier of onions to Malaysia, accounting for over 75% of the total value of imports. China has emerged as a major competitor to India in this field. Exports of fresh fruits and vegetables averaged 111,000 tonnes (\$ 4.8 million) during 1965-66. Exports, more than 95% of which are directed to Singapore, comprise mainly pineapples and bananas, the former for canneries in Singapore.

Imports of processed fruits and vegetables into Malaysia averaged 18,000 tonnes (\$ 5.1 million) during 1965-66; canned vegetables and concentrated juices represent the major items of imports. The pineapple industry in Malaysia is regulated by the powerful Malaysian Pineapple Industry Board and the Pineapple Industry Marketing Corporation, the latter exercising a thorough control over exports. Exports of canned pineapples from Malaysia rose from 53,000 tonnes (\$ 13.1 million) in 1965 to 59,000 tonnes (\$ 14.3 million) in 1966. UK, USA, Canada and West Germany together absorb more than 75% of the total exports. Exports of other processed items are insignificant.

The Survey has revealed that scope exists for

building up a sizable export trade in mandarins, Mosambis, Malta and mangoes, provided satisfactory shipping services are made available. Considering the keen competition from China, stricter enforcement of the grading regulations would be in the interests of India, in consolidating its dominant position in the field of onions. The Survey has also revealed scope for considerable exports of processed products, including canned mango slices, mango nectar, peas and beans; entering into suitable tie-up agreements with leading distributors is essential for promoting exports.

SUMMARY REPORT
OF THE INDUSTRY SEMINAR ON EXPORTS OF FRESH &
PROCESSED FRUITS AND VEGETABLES CONDUCTED IN
BANGALORE

AUGUST 23 - 24, 1968

REPORT OF THE SEMINAR ON
EXPORTS OF FRESH & PROCESSED FRUITS AND VEGETABLES

The Seminar held on August 23 and 24, 1968 in Bangalore discussed in detail the Conclusions and Recommendations embodied in the Report of the Survey on Fresh and Processed Fruits and Vegetables, conducted by the Indian Institute of Foreign Trade, New Delhi. The Seminar supported the recommendations made in the Report and reiterated the urgent need for implementing them on a priority basis for providing a positive export orientation to the horticultural industry of the country. The views of the Seminar in respect of itemised issues are recorded below.

A. FRESH FRUITS AND VEGETABLES

ORGANISATIONAL DEVELOPMENT

The Seminar noted with satisfaction the arguments put forth in the Survey Report for the establishment of a) Banana Development and Export Corporation and b) Fruits and Vegetables Export Corporation for fruits and vegetables other than bananas. It also noted the reasons why it has been recommended that there should be a separate organisation for bananas, especially considering the vast potential of development of bananas.

Consensus of the Seminar was that there will be need for development of the banana export industry in the long run through a comprehensive centralised organisation, as suggested in the Survey Report. In the meanwhile, however, the Seminar suggested that efforts should be made to strengthen the organisations which exist in the field in the country, and which have come

Banana & Fruits
Development
Corporation
together
with Ministry
of Commerce

up by the process of evolution. In particular, the Seminar suggested that ways and means should be explored for expanding and strengthening the existing Banana & Fruit Development Corporation (which, at present, covers the South Indian States) and measures should be devised to see how the working of this Corporation can be expanded to bring the other States also into its fold with the active participation of the Union Government.

All State
Governments

The Seminar strongly endorsed the suggestion embodied in the Survey Report that increasing emphasis should be placed on developing growers' cooperatives in the horticultural development programmes so that the benefit goes to the farmers to the maximum extent possible.

State
Trading
Corporation

In respect of export marketing, the Seminar appreciated the pioneering and strenuous efforts undertaken by the State Trading Corporation and suggested that the Corporation should continue to handle exports of fresh fruits and vegetables (including bananas) till such time as the two proposed organisations are constituted. En passant, the Seminar noted that building up of horticultural exports will inevitably involve initial financial losses for some years, and adequate provision in this regard is a necessary adjunct of any such export effort.

The Seminar unanimously agreed that the target of efforts with regard to pattern of organisational development in the country should be ultimately to see that the requisite institutional set-up comes about which would take care of the

For Con-
sideration
of Ministry
of Commerce

fuller exploitation of the potential of all fruits and vegetables. In this connection, the Seminar appreciated the basic soundness of the Survey Report's recommendation of constituting a) Banana Development and Export Corporation and b) Fruits and Vegetables Export Corporation for accelerating India's horticultural exports and expressed the hope that efforts will be made from now onwards by the appropriate authorities to bring about these two centralised agencies into being in due course.

Action by
Department of
Agriculture

In addition, the Seminar recommended that in order to co-ordinate the developmental efforts in building up horticultural industry for export promotion, it would be essential to have a Standing Horticultural Advisory Committee under the auspices of the Ministry of Food and Agriculture, Department of Agriculture, representing the various interests including the concerned State Governments and export organisations in fruits and vegetables.

PRODUCTION AND PROCUREMENT

ICAR and
all State
Horticultural
Departments

The Seminar supported the viewpoint expressed in the Survey Report that production of suitable varieties constitutes a basic prerequisite for developing export markets and recommended introduction and eventual commercial exploitation of the varieties mentioned in the Report. Expansion in cultivation of varieties which have already proved suitable especially in the case of bananas, citrus, grapes, deciduous fruits and vegetables was recommended.

Further, the Seminar felt that breeding programmes should also be accelerated in the case of all fruits which are suitable for canning. Special mention was made of pineapples, oranges, mangoes, grapes, peaches and tomatoes.

ICAR and all
State Horti-
cultural
Departments

Field Yields and Cultural Practices. With a view to bringing about improvements in field yields and method of horticultural cultivation in the country, the Seminar suggested that agro-techniques in the case of fruits and vegetables selected for exports should be standardised and included in package programmes. National demonstrations should be undertaken in the case of high yielding fruit and vegetable varieties in collaboration with the concerned research institutions in the country.

For consider-
ation of
Planning
Commission

Ceiling on Land Holdings. In view of the complexities involved in the problem, the Seminar agreed with the suggestion embodied in the Report and reiterated that a high-level conference should be convened, under the auspices of the Planning Commission of senior representatives of Departments of Agriculture and Horticulture of the Centre and all States and Union Territories to determine what additional measures, from legislation and other standpoints, need to be taken in order to facilitate acquisition of holdings of adequate size, which represents an important prerequisite for building up a modern horticultural industry in the country, for export purposes particularly in the cooperative and corporate sectors.

Procurement. The Seminar recommended that the processing industry should increasingly concern itself with horticultural activities to the maximum extent possible to ensure continued availability of the raw materials of standard quality for processing.

Grading and Packing. While underlining the importance of the need for standardization and packing in respect of fresh produce exports, the Seminar commended the suggestion in the Report that the Indian Standards Institution may develop, in consultation with the concerned organisations, requisite grades and standards for procurement for exports after taking into account the exacting requirements of the importing countries.

Considering that selection and standardization of fruits and vegetables for export purposes will lead to the problem of marketing of sub-standard produce, the Seminar suggested that a strong by-products industry should be established in the country. The by-products industries will lead to a reduction in the cost of production.

The Seminar took note of the fact that cost of packing bananas and other fresh fruits and vegetables, in accordance with the international standards is very high, rendering exports at present uneconomical. The Seminar, therefore, recommended that the research institutions in the country should evolve a strong and low cost packing material. Further, it suggested that packing units should be encouraged to be set up preferably by the exporting organisations so as to make packing material available to them at economic prices.

Action by
Indian
Standards
Institution

Indian
Institute
of Packa-
ging and
CFTRI

Action by
CFTRI and
Indian Institute
of Horticultu-
ral Research

Considering the need for post-harvest treatments of fruits and vegetables meant for exports purposes, the Seminar suggested standardisation of these treatments for facilitating commercial application. In this connection, it was suggested that institutions like CFTRI and the Indian Institute of Horticultural Research should undertake research in this direction and evolve pilot plants for demonstration.

RESEARCH AND EXTENSION

For considera-
tion of Fourth
Plan Working
Group on
Horticultural
Development

The Seminar recommended the outlay of Rs 30 million on research, extension and development proposed in the Survey Report and suggested that the funds of that order should be made available to fulfil the objectives mentioned in the Report.

In respect of developing horticultural commodities for export, the Seminar commended the suggestion that technical assistance from abroad by way of inviting experts or deputing Indian personnel (including growers) for requisite overseas training may be obtained, under suitable aid programmes.

TRANSPORTATION AND WAREHOUSING

Fourth Plan
Working Group
on Horticul-
tural Develop-
ment

Road and Rail. The Seminar recommended the provision of Rs 40 million for construction of roads in different parts of the country included by the Working Group on Horticultural Development

in the Fourth Plan for the purpose of banana development for export and to improve communication and transport facilities.

For consideration of Railway Board

Considering the urgent need for providing efficient transportation for the movement of perishable produce, the Seminar strongly recommended that the railway authorities should be immediately requested to set up a Study Group for detailed investigation of the specific types and number of wagons required for the movement of bananas and other fruits to the ports in relation to exports. In the meantime, the railway authorities should be asked to provide on a priority basis 200 wooden bodied ventilated wagons to enable the transportation of bananas and other fresh fruits from producing areas to points of shipment.

For consideration of Shipping Corporation of India

Shipping Facilities. The Seminar agreed with the views expressed in the Report on the need for adequate shipping facilities for fresh produce exports and recommended that the Shipping Corporation of India should make provision for refrigerated shipping space in the new vessels acquired by them to enable efficient movement of fresh fruits and vegetables to South East Asian and West Asian countries at controlled temperature and humidity. In due course of time, exporting organisations should be encouraged to acquire their own

refrigerated riefers and carriers for bananas as well as other fruits and vegetables to facilitate efficient and timely transporation to different destinations.

Air Shipments. The Seminar suggested that more intensive study should be taken up by a suitable expert body for exploring ways and means of utilising air shipment for the export of selected fruits and vegetables from India to major foreign markets. The expert body should also examine as to what fruits and vegetables would be comparatively more suitable for air-shipping, taking into consideration different aspects such as price, weight and perishability.

IIFT

Director of
Export
Assistance,
Ministry of
Commerce

Considering the incidence of high air freight rates on horticultural exports, the Seminar recommended that the Government of India should, in the initial period of market exploration, provide adequate subsidy on air freight.

PRODUCTION FINANCE

For consi-
deration of
Department
of Agriculture

The Seminar unanimously agreed that there is urgent need for making available requisite financial facilities for growers and exporters of horticultural produce. It reiterated the suggestion made in the Report that a Study Group may be set up by the Union Government to make an

intensive study of the problems of production finance of the horticultural industry, especially for short, medium and long-term institutional finance for export purposes.

For consideration of
Department of
Agriculture

The Seminar further recommended that export-oriented horticultural crops should be included under the export-oriented development schemes of the Government of India so that 100% financial assistance is provided to the State Governments for organising production programmes.

EXPORT TARGETS

For consideration of
Fourth Plan
Working Group
on Horticultural Development

The targets suggested in the Report are recommended subject to the adoption of those proposed by the Fourth Plan Working Group on Horticulture with respect to bananas, citrus, mangoes and pineapples.

MARKETING AND DISTRIBUTION

Proposed
Banana Development & Export
Corporation
and Fruits and
Vegetables
Export
Corporation

Common Brands. The Seminar reiterated the need of generic and branded publicity for building up India's image in the export markets. In this connection, it was suggested that the possibility of promoting identification of Indian fruits and vegetables exported through common brand names should be explored and these brands should be linked up with the arrangements for proper grading and quality control under Agmark and other suitable standards.

For consideration of Director of Export Assistance Ministry of Commerce

Trial Consignments. The Seminar suggested that trial consignments of new commodities for exports such as grapes, lychees, limes, melons, papayas, etc, should be suitably subsidised by the Government.

Ditto

Sales Promotion and Publicity. The suggestion in the Report regarding sales promotion, publicity, etc, was highly recommended by the Seminar.

INVESTMENT REQUIPMENTS

Department of Agriculture and Fourth Plan Working Group on Horticultural Development

The Seminar indicated that in formulating the estimates for investment for the Fourth Plan period, the Ministry of Food and Agriculture have provided an amount of about Rs 500 million for horticultural development as against the investment envisaged in the Survey of the order of Rs 400 million. As it was felt that certain areas like mechanisation in packing centres and in ports were not covered in the Survey Report, the Seminar recommended further examination of the investment requirements in the light of the proposals formulated by the Ministry of Food & Agriculture.

GENERAL

Action to be initiated by Ministry of Commerce

The Seminar noted with considerable apprehension the existence of total prohibition on importing selected fruits and vegetables from India in certain countries of Europe and Asia. Mediterranean ban on grapefruit imports and East African ban on importing fruits from India were cited as examples in this regard. The Seminar recommended in this connection that the Ministry of Commerce should compile exhaustive information relating to the countries wherein fresh fruits and vegetables imports from India are banned, and the reasons thereof. The Seminar also suggested that the Government of India should take up this matter at appropriate levels for eventual removal of such import restrictions.

B. PROCESSED FRUITS AND VEGETABLES

PRIORITIES

The Seminar took note of the vast potential offered by world markets for exports of processed fruits and vegetables and was in agreement with the priorities for development and exports suggested in the Survey Report.

Mangoes. The Seminar endorsed the export targets in relation to canned mango slices and made the following suggestions:

- | | |
|---|--|
| Action by
IARI and
Indian
Institute of
Horticulture | i) The quality of mango suitable for processing such as Alphonso needs to be improved with a view to avoiding soft-centres. New varieties should be horticulturally evolved both from the price and quality points of view for ultimate processing over the years. |
| Ditto | ii) A special mention was made of 'Rataul' and other varieties which are reported to be most suitable for canning purposes in view of their excellent flavour and texture. Besides Alphonso, these varieties should be experimented by processing units. The useful work that is being done by the Indian Institute of Horticulture and the Indian Agricultural Research Institute in evolving and experimenting with new varieties for canning purposes needs to be speeded up. |
| Action by
CFTRI | iii) CFTRI and other related organisations should undertake intensive work on the accelerated ripening of mangoes. The Seminar was informed of the experiments conducted by CFTRI in this direction which have met with some success. |

Pineapples. The Seminar was in agreement with the suggestions made for expanding exports of pineapple products and recommended the following:

(Next page)

Action by
CFTRI and
Indian Institute of
Horticulture

- i) There is a need for raising the field yield of pineapples with a view to increasing overall production and for bringing down the cost of the finished products. Concerned organisations like CFTRI and Indian Institute of Horticulture, should take up the matter on a priority basis.

State
Horticultural
Departments

- ii) Apart from strengthening the existing areas of production, the possibilities of growing pineapples in new areas like Goa should be explored.

CFTRI and
Indian Institute of
Horticulture

- iii) Botanically the pineapple fruit has to be improved in shape so that the processing yield can be increased, current yield being 25% as compared to 50-60% in major producing countries.

State
Horticultural
Departments

- iv) In view of the inadequate awareness about the varieties suitable for processing, the State Horticultural Departments should lay greater emphasis on the production of cannable varieties in the country.

Citrus. The Seminar noted about the large market potential for citrus products, especially mandarin orange segments, grapefruit sections and citrus juices in Europe, South East Asia and West Asia and made the following suggestions:

Action by
Indian
Institute of
Horticulture,
Department of
Agriculture
and IARI

- i) For entering the large market that exists for mandarin orange segments, it is essential that oranges akin to the Japanese Satsuma variety are grown in the country on a commercial scale. While successful experiments have been conducted in Coorg area for the growth of this variety, commercial production has yet to be initiated. A comprehensive feasibility study as suggested in the Survey Report, should be undertaken with a view to ascertaining the areas having suitable climatic and soil characteristics necessary for the growth of this variety.

Action by
Department
of Agri-
culture

ii) A comprehensive and integrated programme for the production of mandarin orange segments should be evolved on the basis of the above mentioned feasibility study. This programme is essential for building up a viable industry and should include grant of necessary technical and financial assistance for the establishment of export oriented units.

For consi-
deration of
Ministry of
Commerce and
Indian Insti-
tute of Horti-
culture

iii) Two cooperative factories recently est-
ablished in Coorg area for the production
of mandarin orange segments should be
given adequate marketing and technical
assistance so as to help them in building
up a viable export business.

Guavas. Guava as a processed fruit has found its way into the European markets mainly on the strength of high vitamin 'C' content. The demand for processed guavas in halves, quarters, pulp and juice is increasing steadily in the world markets, and the Seminar was of the opinion that India, being one of the largest producers of guavas, can enter this lucrative market profitably. Following recommendations were made by the Seminar:

State
Horticul-
tural Departments

i) Efforts for raising the production of pink varieties of guavas, preferred for halves and quarters in the world markets. should be intensified in the country.

Processed
Foods
EPC

ii) Concurrently white varieties of guavas possessing high vitamin content need to be extensively publicised in the European markets.

Ditto

iii) Guava pulp could also be sold in large quantities in European markets for use in manufacture of baby foods.

Lychees. The Seminar was firmly of the view that Indian lychees can attract a premium price in the world markets. Having banned the import of processed lychees from Mainland China, USA has been looking for alternative sources of supply. India can enter this market profitably if adequate production of processed lychees at reasonable prices is organised. Following recommendations were made by the Seminar:

Action by
CFTRI

- i) CFTRI should conduct necessary experiments for eliminating discolouration that takes place during the processing of Indian lychees.

IARI and
State
Departments
of Horti-
culture

- ii) As production of fresh lychees extends over a short period, investigations should be undertaken to prolong the season, in terms of accelerated ripening at the beginning of the season and staggered ripening at the end of the season.

Tomatoes. The Seminar felt that according to international convention tomatoes are treated as a fruit rather than vegetable.

The Seminar noted that tomato products including concentrates and wholes offer the highest export potential in European markets. Following recommendations were made by the Seminar:

Action by
proposed
Fruits and
Vegetables
Export
Corporation
and DGTD

- i) There is a need to create sizable production capacity for entering the expanding world market for tomato products. Based on a feasibility study, as suggested in the Survey Report, identification of the areas most suitable for the location of new tomato processing units should be undertaken, on a priority basis.

Action by
IARI and
Indian
Institute
of Horti-
culture

- ii) While experiments for the production of canning varieties like Roma and San Marzano have met with adequate success in IARI research centres, there is need for commercial exploitation of these varieties. Efforts in this direction need to be intensified by IARI so that the right varieties are made available to the industry.

Vegetables. The Seminar was in agreement with the findings of the Survey Report in respect of canned vegetables. It was, however, observed that in addition to the vegetables indicated in the Report, cucumbers also hold out adequate prospects in the world markets.

State
Horticul-
tural De-
partments

The Seminar suggested that the State Horticultural Departments should undertake adequate extension work so as to encourage the production of cannable varieties of vegetables which should be made available to the industry at economic prices.

SUGAR

Having regard to the importance of sugar in the fruit processing industry, the Seminar examined in detail the availability of right quality of sugar at reasonable prices to the industry. The Seminar agreed with the Survey report that even the control price of Rs 170 per quintal at which sugar is made available to the industry for export purposes, is 3 to 4 times as high as the corresponding prices in the major supplying countries. For that part of the production which goes to the domestic market, the Indian industry has to procure sugar from the open

market at a high price of Rs 300-400 per quintal which adds significantly to the cost of production, thus requiring the products to be offered at less competitive prices. Concurring with Survey report that the availability of sugar at right prices is a sine qua non for the orderly growth and development of the sector, the Seminar made the following observations:

- i) With the accent placed on the development of agro-based industries, the fruit processing sector needs to be accorded the priority it deserves particularly in the context of rural development and syphoning of the surplus agricultural labour into agricultural processing industries. While Government provides raw materials for maintenance of industries such as engineering, chemicals, etc, the fruit processing sector is not given the same treatment.
- ii) Government having conceded the demand of the pharmaceutical industry for making available sugar at control price for their domestic requirements as well, there is a strong case for making available sugar to the fruit preservation industry at reasonable prices.
- iii) The Survey Report has brought out very clearly that ample scope exists for the exports of Indian products provided they are offered at competitive prices. Sugar being a major component in the cost of production, there is an urgent need to offer sugar to the industry at international prices particularly when sugar is made available to the export industries in countries like UAR at a rate of \$ 6 or Rs 45 per quintal.

For consi-
deration of
Ministry of
Commerce in
consultation
with Direct-
orate of
Sugar and
Vanaspati

Against the above background the Seminar recommended that the case for providing sugar at international price to the entire fruit and vegetable preservation sector (both domestic & exports) will be worth its expenditure and prove to be a good investment in the interests of long-term growth of this sector. Reckoned in financial terms, the total burden on the exchequer, admitting that sugar is supplied at international price for meeting their entire requirements, would be of the order of Rs 18 million. The Seminar was of the view that this cannot be regarded as too dear a price keeping in view the long-term objective of promoting the development of an essential adjunct of an agricultural base.

CANS AND OTHER PACKAGING MATERIALS

Realising the importance of cans as a major cost element accounting for 30% to 40% of total cost of production, the Seminar discussed in detail the availability of cans to the industry both for export and domestic purposes. While the prices of cans available in India for export purposes are almost competitive with those of other countries, there are wide variations in the prices of tinsplate imported from different sources depending upon the availability of free foreign exchange and aid funds. With a view to bringing down the prices of cans, the following recommendations were made by the Seminar:

- i) While the export drawback allowed on tins covers on the average the customs and excise levies, the prices of cans for meeting requirements of the domestic market remain exorbitantly high due to the absence of any such assistance. Considering that a sound domestic base is essential for sustaining the export effort, import of tins, to meet the entire requirements of the processing sector, should be financed with free foreign exchange so as to bring down import prices of tins and thus secure reduction in can prices.

For consideration of
Ministry of
Commerce

- ii) The domestic production of the type of tins required by the processing industry being not of acceptable standards, efforts for organising adequate production of tins of the right quality need to be accelerated. Apart from raising the quality of tins, steps should be taken by the packaging industry to stay abreast of the latest improvements in technology.

For consideration of DGTD
and Indian
Institute of
Packaging

- iii) In view of the increasing popularity of lithographed cans in the world markets, facilities should be provided for the production of lithographed cans in the country by allowing adequate imports of requisite steam resistance inks, varnishes, coatings, etc till such time as these materials can be produced indigenously.

Ministry of
Commerce

- iv) In view of the envisaged increase in the exports of processed items by 1975-76, it would be necessary to enhance the capacity of the packaging industry for the production of OTS cans in the coming years.

For consideration of DGTD

For consideration of DGTD

v) In view of the advantages that can accrue from decentralisation of the fabricating industry, increasing efforts should be made to locate can making units in the production centres.

Ditto

vi) Adequate production of other packaging materials like corrugated boxes at reasonable prices should be organised in the country, if the industry has to play a dominant role in India's export effort.

For consideration of Ministry of Commerce

vii) The labels used by the processing industry being not of acceptable standard, there is a need to import right quality of paper for their manufacture.

MACHINERY AND EQUIPMENT

The Seminar agreed with the Survey recommendations regarding the industry's requirements for modern machines and equipment and suggested the following steps:

Processed Foods EPC and CFTRI

i) Engineering capacity for making prototypes of processing equipments existing in CFTRI should be fully utilised by the industry.

For consideration of Ministry of Commerce and DGTD

ii) Adequate foreign exchange should be made available to the industry for import of such machines which are not indigenously fabricated and are considered essential from the points of view of present requirements and future specialisation. There is need for creating adequate manufacturing capacity in the country for meeting the growing needs of the industry.

Ditto

iii) Collaboration arrangements for the fabrication of sophisticated machines like tomato processing equipments and vacuum evaporators should be encouraged so as to save foreign exchange and create necessary technical expertise in the country.

GRADES & STANDARDS

The need for evolving suitable standards and grades for meeting the sophisticated demands of the foreign consumers was strongly stressed by the Seminar. In this connection, the following recommendations were made:

Processed
Foods EPC

i) The Survey report has compiled the standards and grades as applicable in major consuming markets which are required to be strictly adhered to. Whenever such standards tend to deviate from those existing in the majority of countries overseas, efforts should be made to convince such importers of the use of Indian standards or other minimal standards.

Action by
ISI and
Export
Inspection
Council

ii) The Indian standards should be raised to the level of international standards. In the event of ISI standards meeting the minimal international requirements, enforcement of standards may be made compulsory.

TRANSPORTATION

In respect of the road and rail transport for export shipments, the Seminar recommended the following steps:

For consideration of
Railway
Board

i) Apart from high cost, the Indian railways are not equipped for handling perishables meant for exports. Efforts should be made to convince the Railways of the importance of the industry as a significant foreign exchange earner so as to bear upon them the need to streamline their functioning.

For consideration of
Director of
Export
Assistance,
Ministry of
Commerce

ii) Unlike in the case of rail transport, there is no subsidy available for road transport on export shipments. Since the majority of the exporters have perforce to use road transport due to the incapacity of the railways to handle perishables for exports, the subsidy of 50% should be applicable for road transport as well.

Director of
Export Assistance
Ministry of
Commerce

- iii) In view of the competition being faced from Mainland China and Pakistan in Nepal, transport subsidy should be extended for shipments meant for that country as well.

EXPORT ASSISTANCE

The Seminar considered the existing cash assistance ranging from 3% to 12½% as inadequate. After detailed discussions, the Seminar felt that while the present cash assistance by and large covers the price differential on account of the sugar component, and the drawback on tinplate for cans and likewise neutralizes to a large extent the differential in can prices, the other elements in the cost structure remain uncovered. The need for enhancing the export assistance to the industry was therefore stressed and the following suggestions were made in this context:

For considera-
tion of Director
of Export
Assistance
Ministry of
Commerce

- i) As against the current rate of 3 to 12½% cash assistance, cash assistance should be allowed at the rate of 10 to 20% of the FOB value of exports. Apart from relating the rate of assistance to the sugar content in the product, there is a need for a built-in provision for a higher rate of assistance within the margin of 10 to 20%, so as to serve as a direct incentive for higher exports.

For consideration of
Ministry of
Commerce

- ii) Existing facilities offered for current import replenishment being inadequate, selective transferability of replenishment entitlements within the food group as between one sector and another should be permitted.

Director of
Export Assistance
Ministry of
Commerce

iii) Having regard to the delays experienced in the reimbursement of drawback, the drawback claims should be entrusted to one authority for ensuring expeditious disposal.

DGTD

iv) The present development rebate of 20% being inadequate, the same should be raised to 35% as in the case of marine products.

All State
Governments

v) No special concessions have been extended to the Export Houses in respect of their purchases intended for eventual exports in terms of sales tax levy. The Government of India may examine the possibility of exempting the purchases of Export Houses from sales tax intended for export purposes. It can be ensured that the Export Houses will not be eligible for this benefit if any further processing of products purchased is undertaken before effecting exports.

Action to be
initiated by
Director of
Export Assistance
Ministry of
Commerce

vi) The export cash subsidies applicable to the processed fruit sector were considered inadequate. Further roughly 60 to 65% of the same becomes refundable on account of Income Tax and Sur-Tax thereby reducing the effective subsidies to less than 40% of the amount disbursed. The cash subsidies should therefore be exempt from income tax so that full benefit of the same can be had by the exporting units.

Ditto

vii) The provisions of Income Tax Act and Finance Act governing tax reliefs on exports, amounting to 2 per cent of the sales proceeds of exports, which were withdrawn from the date of the devaluation of the Rupee need re-consideration.

viii) Whereas industries like processed cattle feeds, marine products and vegetable oils and oil cakes have been declared as priority industries by the Government of India, the Fruits and Vegetables industry has not been given the same treatment despite the fact that manufacture of OTS cans has been accorded priority status. In view of the importance of horticultural processing industry as a significant foreign exchange earner and a supplier of vital materials to the Defence Services, it is imperative that such a status should also be accorded to this industry, so that the units engaged in this sector become eligible for tax relief of 8 per cent of the profits under Section 80-I of the Income Tax Act.

For consideration
of Ministry of
Commerce

ix) The Processed Foods Export Promotion Council should go into the details of the cost structure of the various items with a view to presenting a case to the Government of India for the grant of adequate assistance necessary for the development of this industry.

Action by
Processed Foods
EPC

x) The fruits and vegetables processing industry is being looked after by various Ministries including Commerce and Food & Agriculture, which reportedly has been responsible for the lack of a comprehensive developmental approach. For the systematic development of this sector, the work relating to this industry should be entrusted to one Ministry.

For consideration
of Ministry of
Commerce

SALES PROMOTION

For considera-
tion of
Ministries of
Commerce and
Finance

The Seminar stressed the importance of promotion and publicity of Indian processed items in the overseas markets and endorsed the estimates made by the Survey Report. Concurring with the views expressed in the Report, the Seminar observed that

if Indian industry has to build up a sizable business in this trade, the Government of India should liberalise the release of foreign exchange for generic as well as brand publicity.

INSTITUTIONAL APPROACH

The Seminar agreed with the Survey Report that there is urgent need of having a collective approach to the exports of processed fruits and vegetables, in view of the intensely competitive nature of the world markets. The Seminar made the following observations:

Action by
Processed Foods
EPC

i) The Processed Foods Export Promotion Council should prepare a scheme for bringing about unified institutional approach to overseas marketing of processed fruits and vegetables.

Action by
Processed
Foods EPC

ii) The necessity of fixing up floor prices for selected items by the Processed Foods Export Promotion Council with a view to avoiding inter-se competition in the overseas markets, was urged by the Seminar. The Processed Foods Export Promotion Council should work out the details of such a programme.

INVESTMENT REQUIREMENTS

For consider-
ation of
Fourth Plan
Working Group
on Horticultural
Development

The Seminar expressed its complete agreement with the investment requirements as set out in the Survey Report. In the matter of foreign investments the Seminar urged that provision should be made for import of expertise and equipments which are at present not available in the country. There was a

general consensus that action regarding the implementation of the investment recommendations made by the Survey Report should be taken up by the Government of India on an immediate basis.

TECHNICAL PERSONNEL

The Seminar observed that there is a general dearth of technical personnel trained in food technology in the country. With a view to overcoming this handicap, following recommendations were made by the Seminar:

For consideration
of Ministry of
Food and
Agriculture

i) India should seek the assistance of FAC for making available necessary expertise under the extended programme of Technical Assistance of UNO, whenever necessary. Services of food technologists could also be secured from major producing countries like USA, Spain, Italy, France and Bulgaria.

Ditto

ii) Adequate emphasis should be placed on the deputation of Indian technicians to major producing countries like USA, Italy, Spain, France and Bulgaria for advanced training.

CFTRI

iii) Training institutes like CFTRI should accelerate their programme of giving training to Indian scientists in the field of food technology on most modern lines.

EXPORT TARGETS

The Seminar discussed the export projections made by the Survey Report and the considerations thereof. The Seminar was firmly of the view that

it is possible for the Indian industry to achieve these targets provided the measures suggested in the Report are implemented on a priority basis.

C. IMPLEMENTATION OF RECOMMENDATIONS

Recognising the need for immediate implementation of recommendations made in the Survey Report, the Seminar suggested the following:

i) The Planning Commission should set up a high level committee comprising representatives of the Union Ministries of Food and Agriculture, Industries, Commerce and Finance with the association of selected horticultural experts from the States and other related interests for considering the recommendations embodied in the Survey Report with a view to determining the priorities and effecting expeditious implementation.

For consideration
of Planning
Commission

ii) For long-term planning of the horticultural exports, there is a need to set up a Horticultural Production and Export Commission for drawing up a bold and imaginative programme of development in this sector during Fifth and Sixth Plan periods.

For consideration
of Ministry of
Food and
Agriculture and
Ministry of
Commerce

SUBJECT INDEX TO SURVEY REPORT

